

*John Frane Jr. Frane*  
*" Maria*  
Milwaukee August  
ACCOUNT ~~1798~~

OF THE  
Bilious remitting Yellow Fever;

AS

*John Frane*  
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*J John Frane*  
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IN THE  
CITY OF PHILADELPHIA,

IN THE YEAR 1793.

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*By Benjamin Rush, M. D.*

PROFESSOR OF THE INSTITUTES, AND OF CLINICAL MEDICINE, IN THE UNIVERSITY OF PENNSYLVANIA.

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1796.

Mr. Tracey is of opinion, that  
his friends Dr. — Mc G.  
of Glasgow will be of great use  
to Society and an honor to  
the profession to which he  
belongs.



## *THE PREFACE.*

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THE delay of the following publication has been occasioned by the want of health to prepare it for the press, during the winter months. It now goes forward, under the great disadvantages, of having been hastily copied from my notes, amidst frequent professional interruptions. Its imperfections I hope will be overlooked, when it is considered, that my only design in publishing thus prematurely, was to obviate, as much as possible, the danger of the disease, should it unhappily appear in our city in the course of the present season.

In the history of the fever, I have introduced an account of the symptoms and prognosis, in such places as they occurred most naturally, without a strict regard to the artificial order of the schools.

In the detail of the symptoms, I have divided the body into different systems. This division I have found to accord more easily with the principles of medicine which I have adopted, than the common method of de-

scribing them, as they appear in the animal, natural, and vital functions.

In republishing an account of the controversies between the physicians of Philadelphia, my motives were, to prevent the revival of certain opinions and modes of practice, by bringing them forward under the patronage of respectable names, and to justify, in a great measure, from their influence, the want of universal success, by the only safe and proper mode of treating the yellow fever. I hope I shall be excused for this part of the following work, when it is perceived, that I have been more minute in relating my own mistakes, than those of other Physicians; and that I have connected no names with the opinions and modes of practice which I have opposed, but such as were given to the public by their authors, during the prevalence of the fever.

BENJAMIN RUSH.

PHILADELPHIA,  
June 14<sup>th</sup> 1794. }

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A N

## ACCOUNT, &c.

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BEFORE I proceed to describe the fever which is to be the subject of this Essay, it will be proper to give a short account of the diseases which preceded it.

The state of the weather during the first seven months of the year, and during the time in which the fever prevailed in the city, as recorded by Mr Rittenhouse, will be inserted immediately after the history of the disease.

The MUMPS which made their appearance in December 1792, continued to prevail during the month of January 1793. Besides this disorder, there were many cases of catarrh in the city, brought on chiefly by the inhabitants exposing themselves for several hours on the damp ground in viewing the aerial voyage of Mr Blanchard on the 9th day of the month.

The weather, which had been moderate in December and January, became cold in February. The mumps continued to prevail during this month with symptoms so inflammatory, as to require in some cases two bleedings. Many people complained this month of pains and swellings in the jaws. A few had the scarlatina anginosa.

The mumps, pains in the jaws, and scarlatina, continued throughout the month of March. I was called to two cases of pleurisy in this month, which

terminated in a temporary mania. One of them was in a woman of ninety years of age, who recovered. The blood drawn in the other case, (a gentleman from Maryland) was dissolved. The continuance of a tense pulse, induced me notwithstanding to repeat the bleeding. The blood was now fizy. A third bleeding was prescribed, and my patient recovered. Several cases of obstinate erysipelas succeeded inoculation in children during this, and the next month, one of which proved fatal.

Blossoms were universal on the fruit-trees, in the gardens of Philadelphia, on the first day of April. The scarlatina Anginosa continued to be the reigning epidemic in this month.

There were several warm days in May, but the city was in general healthy. The birds appeared two weeks sooner this spring than usual.

The register of the weather shews that there were many warm days in June. The scarlatina continued to maintain its empire during this month.

The weather was uniformly warm in July. The scarlatina continued during the beginning of this month, with symptoms of great violence. A son of James Sharwood, aged seven years, had, with the common symptoms of this disorder, great pains and swellings in his limbs, accompanied with a tense pulse. I attempted in vain to relieve him by vomits and purges. On the 10th day of the month, I ordered six ounces of blood to be drawn from his arm, which I observed afterwards to be very fizy. The next day he was nearly well. Between the 22d and the 24th days of the month, there died three persons whose respective ages were 80, 92, and 96 $\frac{1}{2}$ . The weather at this time was extremely warm. I have elsewhere taken notice of the fatal influence of extreme heat, as well as cold, upon human life in old people. A few bilious remitting fevers appeared towards the close of this month. One of them under my care, ended in a tedious typhus mitior, from

which the patient was recovered with great difficulty. It was the son of Dr Hutchins of the island of Barbadoes.

The weather for the first two or three weeks in August, was temperate and pleasant. The *colera morbus*, and remitting fevers, were now common. The latter were attended with some inflammatory action in the pulse, and a determination to the breast. Several dysenteries appeared at this time, both in the city and in its neighbourhood. During the latter part of July, and the beginning of this month, a number of the distressed inhabitants of St Domingo, who had escaped the desolation of fire and sword, arrived in the city. Soon after their arrival, the influenza made its appearance, and spread rapidly among our citizens. The scarlatina still kept up a feeble existence among children. The above diseases were universal, but they were not attended with much mortality. They prevailed in different parts of the city, and each seemed to appear occasionally to be the ruling epidemic. The weather continued to be warm and dry. There was a heavy rain on the 25th of the month, which was remembered by the citizens of Philadelphia as the last that fell, for many weeks afterwards.

There was something in the heat and drought of the summer months which was uncommon, in their influence upon the human body. Labourers every where gave out (to use the country phrase) in harvest, and frequently too when the mercury in Fahrenheit's thermometer was under 84°. It was ascribed by the country people to the calmness of the weather, which left the sweat produced by heat and labour, to dry slowly upon the body.

The crops of grain and grass were impaired by the drought. The summer fruits were as plentiful as usual, particularly the melons, which were of an excellent quality. The influence of the weather up-

on the autumnal fruits, and upon vegetation in general, shall be mentioned hereafter.

I beg pardon for the length of this introduction. Some parts of it, I hope, will not appear useless in the sequel of this work.

I now enter into a detail of some solitary cases of the epidemic, which soon afterwards spread distress through our city, and terror throughout the United States.

On the 5th of August, I was requested by Dr Hodge to visit his child. I found it ill with a fever of the bilious kind, which terminated (with a yellow skin) in death, on the 7th of the same month.

On the 6th of August, I was called to Mrs Bradford, the wife of Mr Thomas Bradford. She had all the symptoms of a bilious remittent, but they were so acute, as to require two bleedings, and several successive doses of physic. The last purge she took was a dose of *calomel*, which operated plentifully. For several days after her recovery, her eyes and face were of a yellow colour.

On the same day, I was called to the son of Mrs M'Nair, who had been seized violently with all the usual symptoms of a bilious fever. I purged him plentifully with salts and cream of tartar, and took ten or twelve ounces of blood from his arm. His symptoms appeared to yield to these remedies; but on the 10th of the month an haemorrhage from the nose came on, and on the morning of the 12th he died.

On the 7th of this month I was called to visit Richard Palmer, a son of Mrs Palmer in Chestnut-street. He had been indisposed for several days with a sick stomach and vomiting after eating. He now complained of a fever and head-ach. I gave him the usual remedies for the bilious fever, and he recovered in a few days. On the 15th day of the same month, I was sent for to visit his brother William, who was seized with all the symptoms of the same

disorder. On the 5th day his head-ach became extremely acute, and his pulse fell to sixty strokes in a minute. I suspected congestion to have taken place in his brain, and ordered him to lose eight ounces of blood. His pulse became more frequent, and less tense after bleeding, and he recovered in a day or two afterwards.

On the 14th day of this month I was sent for to visit Mrs Leaming, the wife of Mr Thomas Leaming. I suspected at first that she had the influenza, but in a day or two, her fever put on bilious symptoms. She was affected with an uncommon disposition to faint. Her pulse was languid, but *tense*, I took a few ounces of blood from her, and purged her with salts and *calomel*. I afterwards gave her a small dose of laudanum which disagreed with her. In my notebook, I find I have recorded, that "she was the worse for it." I was led to make this remark by its being so very uncommon, for a person who had been properly bled and purged, to take laudanum in a common bilious fever, without being benefited by it. She recovered however slowly, and was yellow for many days afterwards.

On the morning of the 18th of this month, I was requested to visit Peter Aston, in Vine-street, in consultation with Dr Say. I found him on the 3d day of a most acute bilious fever. His eyes were inflamed, and his face flushed with a deep red colour. His pulse seemed to forbid evacuations. We prescribed the strongest cordials; but to no purpose. We found him at 6 o'clock in the evening, sitting upon the side of his bed, perfectly sensible, but without a pulse, with cold clammy hands, and his face of a yellowish colour. He died a few hours after we left him.

None of the cases which I have mentioned, excited the least apprehension of the existence of a yellow fever in our city; for I had frequently seen sporadic cases in which the common bilious fever of Philadelphia, had put on symptoms of great malignity, and

terminated fatally in a few days, now and then with a yellow colour on the skin, before, or immediately after death.

On the 19th of this month I was requested to visit the wife of Mr Peter Le Maigre, in Water-street, between Arch and Race streets, in consultation with Dr Foulke and Dr Hodge. I found her in the last stage of a highly bilious fever. She vomited constantly, and complained of great heat and burning in her stomach. The most powerful cordials and tonics were prescribed, but to no purpose. She died on the evening of the next day.

Upon coming out of Mrs Le Maigre's room, I remarked to Dr Foulke and Dr Hodge, that I had seen an unusual number of bilious fevers, accompanied with symptoms of uncommon malignity, and that I suspected all was not right in our city. Dr Hodge immediately replied, that a fever of a most malignant kind had carried off four or five persons within sight of Mr Le Maigre's door, and that one of them had died in twelve hours after the attack of the disorder. This information satisfied me that my apprehensions were well founded. The origin of this fever was discovered to me at the same time, from the account which Dr Foulke gave me of a quantity of damaged coffee which had been thrown upon Mr Ball's wharf, and in the adjoining dock, on the 24th of July, nearly in a line with Mr Le Maigre's house, and which had putrified there to the great annoyance of the whole neighbourhood.

After this consultation I was soon able to trace all the cases of fever which I have mentioned to this source. Dr Hodge lived a few doors above Mr Le Maigre's, where his child had been exposed to the exhalation from the coffee for several days. Mrs Bradford had spent an afternoon in a house directly opposite to the wharf and dock on which the putrid coffee had emitted its noxious effluvia, a few days before her sickness, and had been much incommoded by it. Her sister Mrs Leaming had visited her

during her illness, and probably caught the fever from her ; for she perfectly recollects perceiving a peculiar smell, unlike to any thing she had been accustomed to in a sick room, as soon as she entered the chamber where her sister lay. Young Mr M'Nair and Mrs Palmer's two sons had spent whole days in a camping house, near where the coffee was exposed, and each of them had complained of having been made sick by its offensive smell, and Mr Aston had frequently been in Water-street near the source of the exhalation.

This discovery of the malignity—extent—and origin of a fever which I knew to be highly contagious, as well as mortal, gave me great pain. I did not hesitate to name it, the *Bilious remitting Yellow Fever*. I had once seen it epidemic in Philadelphia, in the year 1762. Its symptoms were among the first impressions which diseases made upon my mind. I had recorded some of these symptoms. I had likewise recorded its mortality. I shall here introduce a short account of it from a note book which I kept during my apprenticeship.

" In the year 1762, in the months of August, " September, October, November and December, " the bilious yellow fever prevailed in Philadelphia, " after a *very hot summer*, and spread like a plague, " carrying off daily, for some time, upwards of twenty persons.

" The patients were generally seized with rigors, " which were succeeded with a violent fever, and " pains in the head and back. The pulse was full, " and sometimes irregular. The eyes were inflamed, " and had a yellowish cast, and a vomiting almost always attended.

" The 3d, 5th and 7th days were mostly critical, " and the disease generally terminated on one of " them, in life or death.

" An eruption on the 3d or 7th day over the body, " proved salutary.

" An excessive heat, and burning about the region  
" of the liver, with cold extremities, portended  
" death to be at hand."

I have taken notice in my note-book, of the principal remedy which was prescribed in this fever by my preceptor in medicine, but this shall be mentioned hereafter.

Upon my leaving Mrs Le Maigre's, I expressed my distress at what I had discovered, to several of my fellow citizens. The report of a malignant and contagious fever being in town, spread in every direction, but it did not gain universal credit. Some of those physicians who had not seen patients in it, denied that any such fever existed, and asserted (though its mortality was not denied) that it was nothing but the common annual remittent of the city. Many of the citizens, joined the physicians in endeavouring to discredit the account I had given of this fever; and for a while, it was treated with ridicule or contempt. Indignation in some instances was excited against me, and one of my friends, whom I advised, in this early stage of the disorder, to leave the city, has since told me that for that advice " he had hated me."

My lot in having thus disturbed the repose of the public mind, upon the subject of general health, was not a singular one. There are many instances upon record, of physicians who have rendered themselves unpopular, and even odious to their fellow citizens, by giving the first notice of the existence of malignant and mortal diseases. A physician who asserted that the plague was in Messina in the year 1743, excited so much rage in the minds of his fellow citizens against him, as to render it necessary for him to save his life by retreating to one of the churches of that city.

In spite, however, of all opposition, the report of the existence of a malignant and contagious fever in the city, gained so much ground, that the governor of the state directed Dr Hutchinson, the inspector of

fickly vessels, to inquire into the truth of it, and into the nature of the disease. In consequence of this order I received the following letter from Dr Hutchinson.

DEAR SIR,—A considerable alarm has taken place, in consequence of the appearance of an infectious disorder in this city; from which the governor has been induced to direct me to make enquiries relative to the existence and nature of such disorder. In executing this duty I must rely on the assistance of such of my medical brethren as may have been called to attend any of the persons supposed to have been infected: as I understand you have had several of them under your care, I would be much obliged to you to communicate to me (as speedily as can be done with convenience to yourself) such facts as you have been able to ascertain relative to the existence of such disorder; in what part of the city it prevails; when it was introduced; and what was the probable cause of it.

I am, Sir,

With the greatest respect,

Your obedient servant,

J. HUTCHINSON.

*Dr Benjamin Rush.*

To this letter I wrote the following answer a few hours after it came to hand.

DEAR SIR,—A malignant fever has lately appeared in our city, originating, I believe, from some damaged coffee, which putrified on a wharf near Arch-street. This fever was confined for a while to Water-street, between Race and Arch-streets; but I have lately met with it in Second-street and in Kensington; but whether propagated by contagion, or by the original exhalation, I cannot tell. The disease puts on all the intermediate forms of a mild remittent, and

a typhus gravior. I have not seen a fever of so much malignity, so general, since the year 1762.

From, dear Sir,

August 24<sup>th</sup> 1793.

Your's sincerely,

BENJ. RUSH.

A few days afterwards, the following publication, by Dr Hutchinson, appeared in the American Daily Advertiser of August 28th.

The Governor having directed an inquiry to ascertain the facts, respecting the existence of a contagious fever in the city, and the probable means of removing it, Dr Hutchinson, the physician of the port, has made the following statement upon the subject, in a letter to Nathaniel Falconer, Esq; health officer of the port of Philadelphia.

DEAR SIR,—Immediately on the receipt of your letter, with the enclosure from the governor, stating that a considerable alarm had taken place, in consequence of the appearance of an infectious disorder in this city, I endeavoured to take measures to ascertain the facts relative to the existence of such disease: for this purpose, I wrote to such of my medical brethren who had been called on to attend persons supposed to have been infected; and from their answers, as well as from my own observations, I am convinced that a malignant fever has lately made its appearance in Water-street and in Kensington; principally in Water-street, between Arch and Race-streets. This part of the city I examined personally on Thursday and Friday last, and found that east of Front street, and between Arch and Race-streets, sixty-seven persons were diseased, many with the malignant fever. Thirteen of them are since dead, and numbers remain ill. For a while this fever was confined to the above-mentioned part of the city, but the disorder is spreading, and now appears in other places, so that

several are affected in other parts of Water-street, some in Second-street, some in Vine-street, some in Carter's-alley, some in other streets; but in most cases the contagion can be traced to Water-street. Dr Say, who has attended more in this disease than any other physician, informs me, that he first observed it in Kensington, on the fifth or sixth of this month; that he did not perceive it in Water-street, until about the twelfth or fifteenth; but that on its appearance in the latter place, the whole neighbourhood was soon affected.—He further informs me, that he has at this time upwards of 40 patients, which he supposes to be infected; and that he has lost about 20 patients in this disease, since its first appearance. As far as I have been able to ascertain, the number of persons who have died altogether of this fever, amounts to 40 or thereabouts\*.

The general opinion, both of the medical gentlemen and of the inhabitants of Water-street, is, that the contagion originated from some damaged coffee, or other putrified vegetable and animal matter; and, on enquiry, it appears, that on a few wharfs above Arch-street, there was not only a quantity of damaged coffee, which was extremely offensive, exposed for some time, but also some putrid hides, and other putrid animal and vegetable substances. Should, however, Dr Say's opinion be well-founded, that he observed the disease in Kensington previously to its appearance in Water-street, this cannot be the original cause of the contagion.

It does not appear to be an imported disease; for I have heard of no foreigners or sailors that have hitherto been infected; nor has it been found in any lodging houses; but it is, on the contrary, principally confined to the inhabitants of Water-street, and such as have done business, or had considerable inter-

\* The register of the deaths shows that it amounted at that time to upwards of 150.

course with that part of the city. The Dispensary physicians tell me, that out of the large number of sick now under the care of that charitable institution, they have had but one person afflicted with this fever. In the Pennsylvania Hospital, the disorder does not exist.

The disease appears differently in different persons; it puts on all the intermediate forms between a mild remittent and the worst species of Typhus Gravior.

I enclose you a copy of the proceedings of the college of physicians, which contains their recommendation of the means for preventing the future progress of the disease.

I am, with the greatest respect,

Your most obedient servant,

PHILADELPHIA, }  
August 27<sup>th</sup> 1793. }

J. HUTCHINSON.

The disease continued to spread, and with a degree of mortality that had been long unknown by common fevers.

On the 25<sup>th</sup> of the month, the college of physicians was summoned by their president to meet, in order to consult about the best methods for treating this fever, and of checking its progress in the city. After some consideration upon the nature of the disease, a committee was appointed to draw up some directions for those purposes; and the next day the following were presented to the college, and adopted unanimously by them. They were afterwards published in most of the newspapers.

PHILADELPHIA, Aug<sup>st</sup> 26<sup>th</sup> 1793.

THE college of physicians having taken into consideration the malignant and contagious fever that now prevails in this city, have agreed to recommend to their fellow citizens the following means of preventing its progress.

- 1st. That all unnecessary intercourse should be avoided with such persons as are infected by it.
- 2d. To place a mark upon the door or window of such houses as have any infected persons in it.
- 3d. To place the persons infected in the centre of large and airy rooms, in beds without curtains, and to pay the strictest regard to cleanliness, by frequently changing their body and bed linen, also by removing, as speedily as possible, all offensive matters from their rooms.
- 4th. To provide a large and airy hospital, in the neighbourhood of the city, for the reception of such poor persons as cannot be accommodated with the above advantages in private houses.
- 5th. To put a stop to the tolling of the bells.
- 6th. To bury such persons as die of this fever in carriages, and in as private a manner as possible.
- 7th. To keep the streets and wharfs of the city as clean as possible.—As the contagion of the disease may be taken into the body, and pass out of it, without producing the fever, unless it be rendered active by some occasional cause, the following means should be attended to, to prevent the contagion being excited into action in the body.
- 8th. To avoid all fatigue of body and mind.
- 9th. To avoid *standing* or *sitting* in the sun; also in a current of air, or in the evening air.
- 10th. To accommodate the dress to the weather, and to exceed rather in warm, than in cool cloathing.
- 11th. To avoid intemperance, but to use fermented liquors, such as wine, beer, and cyder, in moderation.

The college conceive fires to be very ineffectual, if not dangerous means of checking the progress of this fever. They have reason to place more dependence upon the burning of *gunpowder*. The benefits of *vinegar* and *camphor*, are confined chiefly to infected rooms, and they cannot be used too frequently upon handkerchiefs, or in smelling bottles,

by persons whose duty calls them to visit or attend  
the sick.

Signed by order of the college,

WILLIAM SHIPPEN, JUN.

*Vice President.*

SAMUEL P. GRIFFITS,

*Secretary.*

From a conviction that the disease originated in the putrid exhalations from the damaged coffee, I published in the American Daily Advertiser of August 29th, the following short address to the citizens of Philadelphia, with a view of directing the public attention to the spot where the coffee lay, and thereby of checking the progress of the fever as far as it was continued by the original cause.

"**Mr DUNLAP.**—A doubt has been expressed by Dr Hutchinson, in his letter to the health-officer, whether the malignant fever, which now prevails in our city, originated in an exhalation from some putrid coffee on a wharf, between Arch and Race-streets, *because* it made its first appearance at Kensington. Upon enquiry, it appears that the first persons who died with this fever, about the 5th of the month, in that village, had been previously exposed to the atmosphere of the wharf, and that three of the crew of the Danish ship, who are now ill with it at Kensington, received the seeds of the disease on board their ship, while she lay at or near Race-street wharf. If these facts could not be ascertained, it does not follow, that the disease was not generated by the putrid coffee; for, morbid exhalations, it is well known, produce fevers at the distance of two and three miles, where they are not opposed by houses, woods, or a hilly country. This is obvious to all the farmers who live in the neighbourhood of mill-ponds.

" It is no new thing for the effluvia of putrid vegetables to produce malignant fevers. Cabbage, onions, black pepper, and even the mild potatoe, when in a state of putrefaction, have all been the remote causes of malignant fevers. The noxious quality of the effluvia from mill-ponds, is derived wholly from a mixture of the putrified leaves and bark of trees, with water.

" It is much less common for the effluvia of putrid animal matters to produce fevers. How seldom do we hear of them in the neighbourhood of slaughter-houses, or of the work-ships of skinners and curriers?

" These observations are intended to serve two purposes : 1st, To support the opinion of Dr Hutchinson, that the malignant fever, which has excited so general and so just an alarm in our city, is *not an imported disease* : And, 2dly, To direct the attention of our citizens to the spot from whence this severe malady has been derived. It will be impossible to check it during the continuance of warm and dry weather, while any of the impure matter which produced it, remains upon the pestilential wharf.

R."

This publication had no other effect, than to produce fresh clamours against the author ; for the citizens, as well as the most of the physicians of Philadelphia, had adopted a traditional opinion, that the yellow fever could exist among us only by importation from the West Indies.

In consequence, however, of a letter from Dr Foulke to the Mayor of the city, in which he had decided, in a positive manner in favour of the generation of the fever from the putrid coffee, the Mayor gave orders for the removal of the coffee, and the cleaning of the wharf and dock. It was said that measures were taken for this purpose; but Dr Foulke, who visited the place where the coffee lay, has repeatedly assured me, that they were so far from be-

ing effectual, that an offensive smell was exhaled from it many days afterwards.

I shall pass over, for the present, the facts and arguments on which I ground my assertion of the generation of this fever in our city. They will come in more properly in the close of the history of the disease.

The seeds of the fever, whether received into the body, from the putrid effluvia of the coffee, or by contagion, generally excited the disease in a few days. I met with several cases in which it acted, so as to produce a fever on the same day in which it was received into the system; and I heard of two cases in which it excited sickness, fainting, and fever, within one hour after the persons were exposed to it. I met with no instance in which there was a longer interval than sixteen days, between the contagion being received into the body, and the production of the disease.

This poison acted differently in different constitutions, according to previous habits, to the degrees of predisposing debility, or to the quantity and concentration of the contagion which was applied to the body.

In some constitutions the contagion was at once a remote, a predisposing, and an exciting cause of the disease; hence some persons were affected by it, who had not departed in any instance from their ordinary habits of living, as to diet, dress, and exercise. But it was more frequently brought on by some predisposing, or exciting cause. I shall briefly enumerate each of them.

Whatever be the specific quality of the matter which produced the fever, it is certain that it acted as a stimulus upon the whole system. In a moderate degree, it produced only a quickness and fulness of the pulse, but when it was more active, it induced that species of debility which has been happily called *indirect*. It is the reverse of *direct* debility, which is

produced by the abstraction of natural, and usual stimuli from the body. When the contagion acted with so much force, as to induce indirect debility, a fever sometimes followed without the aid of an exciting cause, but this was seldom the case. In ninety-nine cases out of an hundred, which came under my notice, I could distinctly trace the formation of the disease to some of the following causes, acting separately, or in greater or less combination, and inducing indirect or direct debility upon the system. The causes which induced *indirect* debility were,

1. FATIGUE of body or mind, induced by labour, by walking, riding, watching, or the like. It was labour which excited the disease so universally among the lower class of people. A long walk often induced it. Few escaped it after a day, or even a few hours spent in gunning. A hard trotting horse brought it on two of my patients. Perhaps, riding on horseback, and in the sun, was the exciting cause of the disease in most of the citizens and strangers who were affected by it in their flight from the city. A fall excited it in a girl, and a stroke upon the head excited it in a young man who came under my care. Many people were seized with the disorder in consequence of their exertions on the night of the 7th of September, in extinguishing the fire which consumed Mr Dobson's printing-office, and even the less violent exercise of working the fire engines for the purpose of laying the dust in the streets, added frequently to the number of the sick.

2. HEAT, from every cause, but more especially the heat of the sun, was a very common exciting cause of the disorder. It aided the stimulus of the contagion in bringing on indirect debility. The register of the weather during the latter end of August—the whole of September, and the first two weeks in October, will shew how much the heat of the sun must

have contributed to excite the disease, more especially among labouring people. The heat of common fires, likewise, became a frequent cause of the activity of the contagion, where it had been received into the body; hence the greater mortality of the disease among bakers, blacksmiths, and hatters, than among any other class of people.

3. INTEMPERANCE in eating or drinking. A plentiful meal, and a few extra-glasses of wine, seldom failed of exciting the fever. But where the body was strongly impregnated with the contagion, even the smallest deviation from the customary stimulus of diet, in respect to quality or quantity, roused the contagion into action. A supper of twelve oysters in one, and only three, in another of my patients, produced the disease. A half an ounce of meat rendered the contagion active in a lady, who had lived by my advice for two weeks upon milk and vegetables. A supper of salad dressed after the French fashion, excited it in one of Dr Mease's patients. It is because men are more predisposed, by their constitution and employments, to indirect debility than women, and that young and middle aged persons are more predisposed to this species of debility than old people; that more men than women, and more young than old people, were affected by the disorder.

There were several exciting causes of the disease, which acted by inducing *direct* debility upon the system. It may appear difficult at first sight to explain, how causes so opposite in their nature, as *indirect* and *direct* debility, should produce exactly the same effect. The difficulty vanishes when we reflect, that the abstraction of one stimulus, by accumulating the excitability of the system, increases the force of those which remain. The contagion, when received into the body, was frequently innocent, until it was aided by the addition of a new, or by the abstraction of

a customary stimulus. The causes which acted in the latter way were,

1. **FEAR.** This passion debilitates, only because it abstracts its antagonist passion of courage. In many people the disease was excited by a sudden paroxysm of fear; but I saw some remarkable instances where timid people escaped the disease, although they were constantly exposed to it. Perhaps a moderate degree of fear served to balance the tendency of the system to indirect debility from the excessive stimulus of the contagion, and thereby to preserve it in a state of healthy equilibrium. I am certain that fear did no harm, after the disease was formed, in those cases where a morbid excess of action, or prostration of the moving powers from excess of stimulus, had taken place. It was an early discovery of this fact which led me not to conceal from my patients the true name of this fever, when I was called to them on the *day* of their being attacked by it. The fear co-operated with some of my remedies (to be mentioned hereafter) in reducing the morbid excitement of the arterial system.

2. **GRIEF.** It was remarkable that the greatest concentration of the contagion did not produce the disease in many cases in the attendants upon the sick, while there was a hope of their recovery. The grief which followed the extinction of hope, by death, frequently produced the disease within a day or two afterwards, and that, not in one person only, but often in most of the near relations of the diseased. But the disease was also produced by a change in the state of the mind directly opposite to that which has been mentioned. Many persons that attended patients who recovered, were seized with the disorder a day or two after they were relieved from the toils and anxiety of nursing. The collapse of the mind from the abstraction of the stimulus of hope and de-

fire, by their ample gratification, probably produced that debility, and loss of the equilibrium in the system, which favoured the activity of the contagion.

The effects of both the states of mind which have been described, have been happily illustrated by two facts which are recorded by Dr Jackson\*. He tells us that the garrisons of Savannah and York Town, were both healthy during the siege of those towns, but that the former became sickly as soon as the French and American armies retreated from before it, and the latter, immediately after its capitulation.

**3. COLD.** It will not be necessary to pause here, to prove that cold is a negative quality, and produced only by the absence of heat. Its action in exciting the disease depended upon the diminution of the necessary and natural heat of the body, and thereby so far destroying the equilibrium of the system, as to enable the contagion to produce excessive or convulsive motions in the blood vessels. The night air, even in the warm month of September, was often so cool as to excite the disease, where the dress and bed clothes were not accommodated to it. It was excited in one case by a person's only wetting his feet in the month of October, and neglecting afterwards to change his shoes and stockings. Every change in the weather, that was short of producing frost, evidently increased the number of sick people. This was obvious after the 18th and 19th of September, when the mercury fell to  $44^{\circ}$ , and  $45^{\circ}$ . The hopes of the city received a severe disappointment upon this occasion; for I well recollect there was a general expectation that this change in the weather would have checked the disorder. The same increase of the number of sick was observed to follow the cool weather which succeeded the 6th and 7th of October, on which days the mercury fell to  $43^{\circ}$  and  $46^{\circ}$ .

\* Treatise on the Fevers of Jamaica, page 298.

It was observed that those persons who were *habitually* exposed to the cool air, were less liable to the disease than others. I ascribe it to the *habitual* impression of the cool night air upon the bodies of the city watchmen, that only four or five of them out of 25 were affected by the disorder.

After the body had been heated by violent exercise, a breeze of cool air sometimes excited the disease in those cases where there had been no change in the temperature of the weather.

4. SLEEP. A great proportion of all who were affected by this fever, were attacked in the night. Sleep induced direct debility, and thereby disposed the contagion which floated in the blood, to act with such force upon the system as to destroy its equilibrium, and thus to excite a fever. The influence of sleep, as a pre-disposing, and exciting cause, was often assisted by the want of bed cloaths, suited to the midnight or morning coolness of the air.

5. IMMODERATE EVACUATIONS. The efficacy of moderate purging and bleeding in preventing the disease, led some people to use those remedies in an excess, which both pre-disposed to the disease, and excited it. The morbid effects of these evacuations were much aided by fear; for it was this passion which perverted the judgment in such a manner as to lead to the excessive use of remedies, which, to be effectual, should only be used in moderate quantities.

The disease appeared with different symptoms, and in different degrees, in different people. They both varied likewise with the weather. In describing the disease I shall take notice of the changes in the symptoms which were produced by changes in the temperature of the air.

The precursors, or premonitory signs of this fever were, costiveness, a dull pain in the right side, defect of appetite, flatulency, perverted taste, heat in the stomach, giddiness, or pain in the head, a dull—watery

—brilliant, yellow or red eye, dim and imperfect vision, a hoarseness, or slight sore throat, low spirits, or unusual vivacity, a moisture on the hands, a disposition to sweat at night, or after moderate exercise, or a sudden suppression of night sweats. The dull eye and the lowness of spirits, appeared to be the effects of such an excess in the stimulus of the contagion as to induce indirect debility, while the brilliant eye, and the unusual vivacity, seemed to have been produced by a less quantity of the contagion acting as a cordial upon the system. More or less of these symptoms frequently continued for two or three days before the patients were confined to their beds, and in some people they continued during the whole time of its prevalence in the city without producing the disease. I wish these symptoms to be remembered by the reader. They will form the corner stone of a system, which, I hope, will either eradicate the disorder altogether, or render it as safe as an intermitting fever, or as the small pox, when it is received by inoculation.

Frequent as these precursors of the fever were, they were not universal. Many went to bed in good health, and awoke in the night with a chilly fit. Many rose in the morning after regular and natural sleep, and were seized at their work, or after a walk, with a sudden and unexpected attack of the fever. In most of these cases the disease came on with a chilly fit, which afforded by its violence or duration a tolerable presage of the issue of the disorder.

Upon entering a sick room, where a patient was confined by this fever, the first thing that struck the eye of a physician was the countenance. It was as much unlike that which is exhibited in the common bilious fever, as the face of a wild, is unlike the face of a mild domestic animal. The eyes were sad, watery, and so inflamed, in some cases, as to resemble two balls of fire. Sometimes they had a most brilliant or ferocious appearance. The face was suffused with blood,

or of a dusky colour, and the whole countenance was downcast and clouded. After the 10th of September, when a determination of blood to the brain became universal, there was a perternatural dilatation of the pupil. Sighing attended in almost every case. The skin was dry, and frequently of its natural temperature. These were the principal symptoms which discovered themselves to the eye and hand of a physician. The answers to the first questions proposed upon visiting a patient, were calculated to produce a belief in the mind of a physician, that the disease under which the patient laboured, was not the prevailing malignant epidemic. I did not, for many weeks, meet with a dozen patients, who acknowledged that they had any other indisposition than a common cold, or a slight remitting or intermitting fever. I was particularly struck with this self-deception in many persons, who had nursed relations that had died with the yellow fever, or who had been exposed to its contagion in families, or neighbourhoods, where it had prevailed for days, and even weeks, with great mortality. I shall hereafter trace a part of this disposition in the sick to deceive themselves, to the influence of certain publications which appeared soon after the disease became epidemic in the city.

In the further history of this fever, I shall describe its symptoms as they appeared.

- I. In the sanguiferous system.
- II. In the liver, lungs, and brain.
- III. In the alimentary canal; in which I include the stomach as well as the bowels.
- IV. In the secretions and excretions.
- V. In the nervous system.
- VI. In the fenses and appetites.
- VII. In the lymphatic and glandular system.
- VIII. Upon the skin.
- IX. In the blood.

After having finished this detail, I shall mention some general characters of the disease, and afterwards subdivide it into classes, according to its degrees and duration.

I. The **BLOOD VESSELS** (and not the stomach and bowels, according to Dr Warren) are the "seat and "throne" of this as well as of all other fevers. I have publickly taught for several years, that a fever is occasioned by a convulsion in the arterial system. When the epidemic, which we are now considering, came on with a full, tense, and quick pulse, this convulsion was very perceptible; but it frequently came on with a weak pulse; often without any preternatural frequency or quickness, and sometimes so low as not to be perceived without pressing the artery at the wrists. In many cases the pulse intermitted after the 4th, in some after the 5th, and in others after the 14th stroke. These intermissions occurred in several persons who were infected, but who were not confined by the fever. They likewise continued in several of my patients for many days after their recovery. This was the case in particular in Mrs Clymer, Mrs Palmer's son William, and in a son of Mr William Compton. In some there was a preternatural slowness of the pulse. It beat 44 strokes in a minute in Mr B. W. Morris—48 in Mr Thomas Wharton, Jun. and 64 in Mr William Sansom, at a time when they were in the most imminent danger. Dr Physic informed me, that in one of his patients the pulse was reduced in frequency to 30 strokes in a minute. All these different states of the pulse have been taken notice of by authors who have described pestilential fevers.\* They have been improperly ascribed to the absence of fever: I would rather suppose that they are occasioned by the stimu-

\* Vergasca, Sorbait, and Boate in Haller's *Bibliotheca Medicinae*, Vol. III. also by Dr Stubbs in the *Philosophical Transactions*, and Riverius in his *treatise de febre pestilenti*.

hus of the contagion, acting upon the arteries with too much force to admit of their being excited into quick and convulsive motions. The remedy which removed it (to be mentioned hereafter) will render this explanation of its cause still more probable. Milton describes a darkness, from an excess of light. In like manner, we observe in this small intermitting and slow pulse, a deficiency of strength from an excess of force applied to it. In every case of it which came under my notice, it was likewise tense or chorded. This species of pulse occurred chiefly in the month of August, and in the first ten days in September. I had met with it formerly in a sporadic case of yellow fever. It was new to all my pupils. One of them, Mr Washington, gave it the name of the "undescribable pulse." It aided in determining the specific nature of this fever before the common bilious remittent disappeared in the city. For a while, I ascribed this peculiarity in the pulse, more especially its slowness, to an affection of the brain only, and suspected that it was produced by what I have taken the liberty elsewhere to call the *phrenicula*, or inflammatory state of the internal dropsy of the brain, and which I have remarked to be an occasional symptom and consequence of remitting fever.\* I was the more disposed to adopt this opinion, from perceiving this slow and intermitting pulse more frequently in children than in adults. Impressed with this idea, I requested Mr Coxe, one of my pupils, to assist me in examining the state of the eye. For two days we discovered no change in it, but on the third day after we began to inspect the eyes, we both perceived a preternatural dilatation of the pupils in different patients; and we seldom afterwards saw an eye in which it was absent. In Dr Say it was attended by a squinting, a symptom which marks a high degree of a morbid affection of the brain. Had

\* Medical Inquiries and Observations, Vol. II.

this slowness or intermission in the pulse occurred only after signs of inflammation or congestion had appeared in the brain, I should have supposed that it had been derived wholly from that cause; but I well recollect having felt it several days before I could discover the least change in the pupil of the eye. I am forced therefore to call in the operation of another cause, to assist in accounting for this state of the pulse; and this I take to be a spasmodic affection, accompanied with preternatural dilatation or contraction of the heart. Lieutaud mentions this species of pulse in several places, as occurring with an undue enlargement of this muscle.\* Dr Ferriar describes a case, in which a low, irregular, intermitting and hardly perceptible pulse, attended a morbid dilatation of the heart.† In a letter I lately received from Mr Hugh Ferguson, a student of medicine in the college of Edinburgh, written from Dublin, during the time of a visit to his father, and dated September 30th, 1793, I find a fact which throws additional light upon this subject. “A case (says my young correspondent) where a remarkable intermission of pulse was observed, occurred in this city last year. A gentleman of the medical profession, middle aged, of a delicate habit of body, and who had formerly suffered phthisical attacks, was attacked with the acute rheumatism. Some days after he was taken ill, he complained of uncommon fulness, and a very peculiar kind of sensation about the praecordia, which it was judged proper to relieve by copious blood-letting. This being done, the uneasiness went off. It returned however three or four times, and was as often relieved by bleeding. During each of his fits (if I may call them so,) the patient experienced an almost total remission of his pains in his limbs; but they returned with equal or greater violence after

\* Historia Anatomica Medica, Vol. II. Obs. 405. 418. 423.  
510.

† Medical Histories and Reflections, p. 150.

blood-letting. During the fit there was an intermission of the pulse (the first time) of no less than thirteen strokes. It was when beating full, strong, and slow. The third intermission was of nine strokes. The gentleman soon recovered, and has enjoyed good health for ten months past. The opinion of some of his physicians was, that the heart was affected as a muscle, by the rheumatism, and alternated with the limbs."

I am the more inclined to believe the peculiarity in the pulse, which has been mentioned in the yellow fever, arose in part from a spasmodic affection of the heart, from the frequency of an uncommon palpitation of this muscle, which I discovered in this disorder, more especially in old people. The disposition likewise to syncope and sighing, which so often occurred, can be explained upon no other principle than inflammation, spasm, dilatation, or congestion in the heart. After the 10th of September this undescribable or *sulky* pulse (for by the latter epithet I sometimes called it) became less observable; and in proportion as the weather became cool, it totally disappeared. It was gradually succeeded by a pulse, full, tense, quick, and as frequent as in pleurisy or rheumatism. It differed however from a pleuritic or rheumatic pulse, in imparting a very different sensation to the fingers. No two strokes seemed to be exactly alike. Its action was of a hobbling nature. It was at this time so familiar to me, that I think I could have distinguished the disease by it, without seeing the patient. It was remarkable, that this pulse attended the yellow fever even when it appeared in the mild form of an intermittent, and in those cases where the patients were able to walk about, or go abroad. It was nearly as *tense* in the remissions and intermissions of the fever, as it was in the exacerbations. It was an alarming symptom, and when the only remedy which was effectual to remove it, was neglected, such a change in the system

was induced, as frequently brought on death in a few days.

This change in the pulse, from extreme lowness to fulness and activity, appeared to be owing to the diminution of heat of the weather, which, by its stimulus, added to that of the contagion, had induced those symptoms of indirect debility in the pulse, which have been mentioned.

The pulse most frequently lessened in its fulness, and became gradually weak, frequent, and imperceptible before death, but I met with several cases in which it was full, active, and even tense in the last hours of life.

HEMORRHAGIES belong to the symptoms of this fever, as they appeared in the sanguiferous system. They occurred in the beginning of the disorder chiefly from the nose and uterus. Sometimes but a few drops of blood distilled from the nose. The menses were unusual in their quantity, when they appeared at their stated periods, but they often came on a week or two before the usual time of their appearance. I saw one case of an hemorrhage from the lungs on the first day of the fever, which was mistaken for a common hemoptysis. As the disease advanced, the discharges of blood became more universal. They occurred from the gums, ears, stomach, bowels, and urinary passages. Drops of blood issued from the inner Canthus of the left eye of Mr Josiah Coates. Dr Woodhouse attended a lady who bled from the holes in her ears, which had been made by ear-rings. Many bled from the orifices which had been made by bleeding, several days after they appeared to have been healed: and some from wounds, which had been made in veins in unsuccessful attempts to draw blood. These last hemorrhages were very troublesome, and, in some cases, precipitated death.

II. I come now to mention the symptoms of this

fever, as they appeared in the LIVER, the LUNGS, and the BRAIN. From the histories which I had read of this disorder, I was early led to examine the state of the LIVER, but I was surprised to find so few marks of hepatic affection. I met with but two cases in which the patient could lie only on the right side. Many complained of a dull pain in the region of the liver, but very few complained of that soreness to the touch about the pit of the stomach which is taken notice of by authors, and which was universal in the yellow fever in 1762. In proportion as the cool weather advanced, a preternatural determination of the blood took place chiefly to the lungs and brain. Many were affected with pneumonic symptoms, and some appeared to die of sudden effusions of blood or serum in the lungs. It was an unexpected effusion of this kind which put an end to the life of Mrs Keppele, after she had exhibited hopeful signs of a recovery.

I saw one person who recovered from an affection of the lungs, by means of a copious expectoration of yellow phlegm and mucus. But the BRAIN was principally affected with morbid congestion in this disorder. It was indicated by the suffusion of blood in the face, by the redness of the eyes, by a dilatation of the pupils, by the pain in the head, by the hemorrhages from the nose and ears, by the sickness or vomiting, and by an almost universal costive state of the bowels. I wish to impress the reader with these facts, for they formed one of the strongest indications for the use of the remedies which I adopted for the cure of this disorder. It is difficult to determine the exact state of these viscera in every case of bilious and yellow fevers. Inflammation certainly takes place in some cases, and internal hemorrhages in others; but I believe the most frequent affection of these viscera consists in a certain morbid accumulation of blood in them, which has been happily called, by Dr Clark, an *engorgement*, or choaking of the

the blood vessels. I believe further with Dr Clark \* and Dr † Balfour, that death, in most cases in bilious fevers, is the effect of these morbid congestions, and wholly unconnected with direct debility, or a supposed putrefaction in the fluids. It is true, the dissections of Dr Physic and Dr Cathral discovered no morbid appearances in either of the viscera which have been mentioned, but it should be remembered, that these dissections were made early in the disorder. Dr Annan attended the dissection of a brain of a patient who died at Bush-hill some days afterwards, and observed the blood vessels to be unusually turgid. In those cases where congestion only takes place, it is as easy to conceive that all morbid appearances in the brain may cease after death, as that the suffusion of blood in the face should disappear after the retreat of the blood from the extremities of the vessels in the last moments of life. It is no new thing for morbid affections of the brain to leave either slender or no marks of disease after death. Dr Quin has given a dissection of the brain of a child that died with all the symptoms of hydrocephalus internus, and yet nothing was discovered in the brain but a slight turgescence of its blood vessels. Dr Girdlestone says, no injury appeared in the brains of those persons who died of the symptomatic apoplexy, which occurred in a spasmodic disease which he describes in the East Indies; and Mr Clark informs us, that the brain was in a natural state in every case of death from puerperile fever, notwithstanding it seemed to be affected in many cases soon after the attack of that disorder \*.

I wish it to be remembered here, that the yellow fever, like all other diseases, is influenced by climate and season. The determination of the fluids is seldom the same in different years, and I am sure it varied with the weather in the disease which I am now

\* Vol. i. p. 168.

† Treatise on the Intestinal remitting Fever, p. 125.

\* Essay on the Epidemic Disease of Lying-in Women, of the years 1787 and 1788 , I. 34.

describing. Dr Jackson speaks of the head being most affected in the West India fevers in *dry* situations. Dr Hillary says, that there was an unusual determination of the blood towards the brain, after a *hot* and *dry* season in the fevers of Barbadoes in the year 1753, and Dr Ferriar, in his account of an epidemic jail fever in Manchester, in 1789, 1790, informs us, that as soon as frost set in, a delirium became a more frequent symptom of that disorder, than it had been in more temperate weather.

III. THE STOMACH and BOWELS were affected in many ways in this fever. The disease seldom appeared without nausea or vomiting. In some cases, they both occurred for several days, or a week, before they were accompanied by any fever. This was more frequently the case, where the disease was taken by exhalation from the putrid coffee, than by contagion. Sometimes a pain, known by the name of gastrodynbia, ushered in the disease. The stomach was so extremely irritable, as to reject drinks of every kind. Sometimes green or yellow bile was rejected on the first day of the disorder, by vomiting; but I much oftener saw it continue for two days, without discharging any thing from the stomach, but the drinks which were taken by the patient. If the fever in any case came on without vomiting, or if it had been checked by remedies that were ineffectual to remove it altogether, it generally appeared, or returned, on the 4th or 5th day of the disorder. I dreaded this symptom on those days, for although it was not always the forerunner of death, yet it generally rendered the recovery more difficult and tedious. In some cases, the vomiting was more or less constant from the beginning to the end of the disorder, whether it terminated in life or death.

The vomiting which came on about the 4th or 5th day, was accompanied with a burning pain in the region of the stomach. It produced great an-

xiety and tossing of the body from one part of the bed to another. In some cases, this painful burning occurred before any vomiting had taken place. Drinks were now rejected from the stomach so suddenly, as often to be discharged over the hand that lifted them to the head of the patient. The contents of the stomach (to be mentioned hereafter) were sometimes thrown up with a convulsive motion, that propelled them in a stream to a great distance, and, in some cases, all over the clothes of the bystanders.

Flatulency was an almost universal symptom in every stage of this disorder. It was very distressing in many cases. It occurred chiefly in the stomach.

The BOWELS were generally costive, and in some patients, as obstinately so, as in the dry gripes. In some cases, there was all the pain and distress of a bilious cholic, and in others, the tenesmus, and mucous, and bloody discharges of a true dysentery. A diarrhoea introduced the disease in a few persons, but it was chiefly in those who had been previously indisposed with weak bowels. A painful tension of the abdomen took place in many, accompanied in some instances by a dull, and in others, by an acute pain, in the lower part of the belly.

The vomiting and costiveness, in the first stage of this fever, I believe were occasioned chiefly by the morbid state of the brain. But the vomiting and burning in the stomach, and the pain in the bowels, which occurred on the 4th and 5th days, appeared to be the effects of inflammation, induced in part by the effusion of acrid bile into the alimentary canal, and in part by a change in the action of the coats of the stomach and bowels, induced by effusions of serum or red blood, similar to those which take place on the skin in malignant fevers, and which are known by the name of petechiae. I am the more disposed to ascribe a large portion of the inflammation, erosions, and mortifications, which have been observed

after death, in the stomach and bowels, in this fever, to the latter cause, from the discovery which has been made of petechiæ and carbuncles in the bowels in the plague, exactly similar to those which are found on the external parts of the body in that disorder \*.

IV. I come now to describe the state of the SECRECTIONS and EXCRETIONS, as they appeared in different stages of this fever.

There appeared to be a preternatural secretion and excretion of bile. It was discharged from the stomach and bowels in large quantities, and of very different qualities and colours.

1. On the first and second days of the disorder, many patients puked from half a pint to nearly a quart of green or yellow bile. Four cases came under my notice, in which black bile was discharged on the *first* day. Three of these patients recovered. I ascribed their recovery, to the bile not having as yet acquired acrimony enough to inflame or corrode the stomach.

2. There was frequently on the 4th or 5th day, a discharge of matter from the stomach, resembling coffee impregnated with its grounds. This was always an alarming symptom. I believed it at first to be a modification of vitiated bile; but I was led afterwards, by its resemblance to the urine (to be described hereafter) to suspect that it was produced by a morbid secretion in the liver, and effused from it into the stomach. Many recovered who discharged this coffee-coloured matter.

3. Towards the close of the disease, there was a discharge of matter of a deep or pale black colour, from the stomach. Flakey substances frequently

\* Haller's *bibliotheca Medicinæ*, vol. iv. p. 375.

floated in the basin or chamber-pot upon the surface of this matter. It appeared to be bile in a highly acrid state. That the bile may become extremely acrid in this stage of the disorder, is evident from several observations and experiments. Dr Physic's hand was inflamed in consequence of its being wetted by bile in this state, in dissecting a dead body. Dr Arthaud examined the body of a soldier who died of the yellow fever at the French Cape on the 16th of May 1789, whose bile imparted a green colour \*, to the tincture of radishes. I am not certain that the black matter, which was discharged in the last stage of this disorder, was always vitiated or acrid bile. It was probably, in some cases, the matter which was formed in consequence of the mortification of the stomach. The matter which was discharged from carbuncles on the skin, as I shall say hereafter, was always of a dark colour. Several dissections of persons who have died of the yellow fever, have shewn abscesses in the stomach, not unlike external carbuncles. May not the black matter in some cases be derived from these internal carbuncle-like abscesses?

4. There was frequently discharged from the stomach, in the close of the disease, a large quantity of grumous blood, which exhibited a dark colour on its outside, resembling that of some of the matters which have been described, and which I believe was frequently mistaken for what is commonly known by the name of the *black vomiting*. Several of my patients did me the honour to say, I had cured them, after that symptom of approaching dissolution had made its appearance; but I am inclined to believe, dark-coloured blood only, or the coffee coloured matter, was mistaken for the matters which constitute the fatal black vomiting. I except here the black discharge before mentioned, which took place in three

\* Rosier's Journal for Jan. 1790, vol. xxxvi p. 382.

cases on the first day of the disorder. This I have no doubt was bile, but it had not acquired its greatest acrimony, and it was discharged before mortification, or even inflammation, could have taken place in the stomach. Several persons died without a black vomiting of any kind.

Along with all the discharges from the stomach which have been described, there was occasionally a large worm, and frequently large quantities of mucus and tough phlegm.

The colour, quality, and quantity of the *fæces*, depended very much upon the treatment of the disease. Where active purges had been given, the stools were copious, foetid, and of a black or dark colour. Where they were spontaneous, or excited by weak purges, they had a more natural appearance. In both cases, they were sometimes of a green, and sometimes of an olive colour. Their smell was more or less foetid, according to the time in which they had been detained in the bowels. I visited a lady who had passed several days without a stool, and who had been treated with tonic remedies. I gave her a purge, which in a few hours procured a discharge of *fæces*, so extremely foetid, that they produced fainting in an old woman who attended her. The acrimony of the *fæces* was such as to excoriate the rectum, and sometimes to produce an extensive inflammation all around its external termination. The quantity of the stools produced by a single purge was in many cases very great. They could be accounted for only by calling in the constant, and rapid formation of them, by preternatural effusions of bile into the bowels.

I attended one person, and heard of two others, in whom the stools were as white as in the jaundice. I suspected in these cases, the bile was so impacted in the gall bladder, or in its ducts, as not to be discharged in a sufficient quantity to colour the *fæces*. Large round worms were frequently discharged with the stools.

The *urine* was in some cases plentiful, and of a high colour. It was at times clear, and at other times turbid. About the 4th or 5th day it sometimes assumed a dark colour, and resembled strong coffee. This colour continued in one instance for several days after the patient recovered. In some, the discharge was accompanied by a burning pain, resembling that which takes place in a gonorrhœa. I met with one case in which this burning came on only in the evening, with the exacerbation of the fever, and went off with its remission in the morning.

A total deficiency of the urine took place in many people for a day or two, without pain. Dr Sydenham takes notice of the same symptom in the highly inflammatory small pox \*. It generally accompanied, or portended great danger. I suspected that it was connected in this disease, as in the hydrocephalus internus, with a morbid state of the brain. I heard of one case in which there was a *suppression* of urine, which could not be relieved without the use of the catheter.

A young man was attended by Mr Fisher, one of my pupils, who discharged several quarts of limpid urine just before he died.

Dr Arthaud informs us, in the history of the dissection before quoted, that the urine after death imparted a green colour to the tincture of radishes.

Many people were relieved by copious *sweats* on the first day of the disorder. They were in some instances spontaneous, and in others, they were excited by diluting drinks, or by strong purges. These sweats were often of a yellow colour, and sometimes had an offensive smell. They were in some cases cold, and attended at the same time with a full pulse. In general, the skin was dry in the beginning as well as in the subsequent stages of the disorder. I saw but few instances of the disease terminating like com-

\* Wallis's Edition, Vol. i. p. 197.

mon fevers, by sweat, after the third day. I wish this fact to be remembered by the reader, for it laid part of the foundation of my method of curing this fever.

There was in some cases a preternatural secretion and excretion of *mucus* from the glands of the throat. It was discharged by an almost constant hawking and spitting. All who had this symptom recovered.

The TONGUE was in every case moist, and of a white colour, on the first and second days of the fever. As the disease advanced, it assumed a red colour, and a smooth shining appearance. It was not quite dry in this state. Towards the close of the fever, a dry black streak appeared in its middle, which gradually extended to every part of it. Few recovered after this appearance on the tongue took place.

V. In the NERVOUS SYSTEM the symptoms of the fever were different according as it affected the brain—the muscles—the nerves—or the mind. The sudden and violent action of the contagion, induced apoplexy in several people. In some, it brought on syncope, and in others, convulsions in every part of the body. The apoplectic cases generally proved fatal, for they fell chiefly upon hard drinkers. Persons affected by syncope, or convulsions, sometimes fell down in the streets. Two cases of this kind happened near my house. One of them came under my notice. He was supposed by the by-standers to be drunken, but his countenance, and convulsive motions, soon convinced me that this was not the case.

A coma was observed in some people, or an obstinate wakefulness in every stage of the disorder. The latter symptom most frequently attended the convalescence. Many were affected with immobility, or numbness in their limbs.

These symptoms were constant or temporary, according to the nature of the remedies which were

made use of, to remove them. They extended to all the limbs, in some cases, and only to a part of them in others. In some, a violent cramp, both in the arms and legs, attended the first attack of the fever. I met with one case in which there was a difficulty of swallowing, from a spasmodic affection of the throat, such as comes in the locked-jaw.

A hiccup attended the last stage of this disorder, but I think less frequently than the last stage of the common bilious fever. I saw only five cases of recovery where this symptom took place.

There was in some instances a deficiency of sensibility, but in others a degree of it, extending to every part of the body, which rendered the application of common rum to the skin, and even the least motion of the limbs, painful.

I was surprized to observe the last stage of this fever to exhibit so few of the symptoms of the common typhus or nervous fever. Tremors of the limbs and twitchings of the tendons, were uncommon. They occurred only in those cases in which there was a predisposition to nervous diseases, and chiefly in the convalescent state of the disorder.

While the muscles and nerves in many cases exhibited so many marks of preternatural weakness, in some they appeared to be affected with preternatural excitement. Hence patients, in the close of the disorder, often rose from their beds, walked across their rooms, or came down stairs, with as much ease as if they had been in perfect health. I lost a patient in whom this state of morbid strength occurred to such a degree, that he stood up before his glass, and shaved himself on the day in which he died.

The mind suffered with the morbid state of the brain and nerves. A delirium was a common symptom. It alternated in some cases with the exacerbations and remissions of the fever. In some it continued without a remission, until a few hours before death. Many, however, passed through the whole

course of the disease without the least derangement in their ideas, even where there were evident signs of a morbid congestion in the brain. Some were seized with maniacal symptoms. In these, there was an apparent absence of fever. Such was the degree of this mania in one man, that he stripped off his shirt, left his bed, and ran through the streets, with no other covering than a napkin on his head, at 8 o'clock at night, to the great terror of all who met him. The symptoms of mania occurred most frequently towards the close of the disease, and sometimes continued for many days, and weeks, after all the febrile symptoms had disappeared.

The temper was much affected in this fever. There were few in whom it did not produce great depression of spirits. This was the case in many, in whom pious habits had subdued the fear of death. In some the temper became very irritable. Two cases of this kind came under my notice, in persons who in good health were distinguished for uncommon sweetness of disposition and temper.

I observed, in several persons, the operations of the understanding to be unimpaired, throughout the whole course of the fever, who retained no remembrance of any thing that passed in their sickness. My pupil Mr Fisher furnished a remarkable example of this correctness of understanding, with a suspension of memory. He neither said, nor did any thing during his illness, that indicated the least derangement of mind, and yet he recollects nothing that passed in his room, except my visits to him. His memory awakened upon my taking him by the hand, on the morning of the 6th day of his disorder, and congratulating him upon his escape from the grave.

In some, there was a weakness, or total defect of memory, for several weeks after their recovery. Dr Woodhouse informed me that he had met with a woman who, after she had recovered, could not recollect her own name.

Perhaps it would be proper to rank that self-deception with respect to the nature and danger of the disease which was so universal, among the instances of derangements of mind.

The pain which attended the disorder was different according as the system was affected by direct or indirect debility. In those cases in which the system sunk under the violent impression of the contagion, there was little or no pain. In proportion as the system was relieved from this oppression, it recovered its sensibility. The pain in the head was acute and distressing. It affected the eyeballs in a peculiar manner. A pain extended, in some cases from the back of the head, down the neck. The ears were affected in several persons with a painful sensation, which they compared to a string drawing their two ears together through the brain. The sides, and the regions of the stomach, liver, and bowels, were all, in different people, the seats of either dull or acute pains. The stomach, towards the close of the disorder, was affected with a burning or spasmodic pain of the most distressing nature. It produced, in some cases, great anguish of body and mind; in others, it produced cries and shrieks, which were often heard on the opposite side of the streets to where the patients lay. The back suffered very much in this disorder. The stoutest men complained, and even groaned under it. An acute pain extended in some cases from the back to one or both thighs. The arms and legs sympathized with every other part of the body. One of my patients, upon whose limbs the disease fell, with its principal force, said that his legs felt as if they had been scraped with a sharp instrument. The sympathy of friends with the distresses of the sick, extended to a small part of their misery, when it did not include their sufferings from pain. One of the dearest friends I ever lost by death, declared, in the height

of her illness, that "no one knew the pains of a yellow fever, but those who felt them."

VI. The *senses* and *appetites* exhibited several marks of the universal ravages of this fever upon the body. A deafness attended in many cases, but it was not often, as in the nervous fever, a favourable symptom. A dimness of sight was very common in the beginning of the disease. Many were affected with temporary blindness. In some there was a loss of sight, in consequence of gutta serena, or a total destruction of the substance of the eye. There was, in many persons, a foreness to the touch, which extended all over the body. I have often observed this symptom to be the fore-runner of a favourable issue of a nervous fever, but it was less frequently the case in this disorder.

The *thirst* was moderate or absent in some cases, but it occurred in the greatest number of persons whom I saw in this fever. Sometimes it was very intense. One of my patients, who suffered by an excessive draught of cold water, declared just before he died, that "he could drink up the Delaware." It was always an alarming symptom, when this thirst came on in this extravagant degree in the last stage of the disorder. In the beginning of the fever, it generally abated upon the appearance of a moist skin. Water was preferred to all other drinks.

The *appetite* for food was impaired in this, as in all other fevers, but it returned much sooner than is common after the patient began to recover. Coffee was relished in the remissions of the fever, in every stage of the disorder. So keen was the appetite for solid, and more especially for animal food, after the solution of the fever, that many suffered from eating aliment that was improper from its quality or quantity. There was a general disrelish for wine, but malt liquors were frequently grateful to the appetite.

Many people retained a relish for tobacco much

longer after they were attacked by this fever, and acquired a relish for it much sooner after they began to recover, than are common in any other febrile disease. I met with one case, in which my patient, who was so ill as to require two bleedings, continued to chew tobacco through every stage of his fever.

The convalescence from this disorder was marked, in some instances, by a sudden revival of the venereal appetite. Several weddings took place in the city between persons who had recovered from the fever. Twelve took place among the convalescents in the hospital at Bush-hill. I wish I could add, that the passion of the sexes for each other, among those subjects of public charity, was always gratified in a lawful way. Delicacy forbids a detail of the scenes of debauchery which were practised near the hospital, in some of the tents which had been appropriated for the reception of convalescents. It is not peculiar to the yellow fever to produce this morbid excitability of the venereal appetite. It was produced in a much higher degree by the plague which raged in Messina in the year 1743.

VII. The *lymphatic and glandular system* did not escape without some signs of the infection of this disease. I met with three cases of swellings in the inguinal, two in the parotid, and one in the cervical glands: all these patients recovered without a suppuration of their swellings. They were extremely painful in one case in which no redness or inflammation appeared. In the others, there was considerable inflammation, and but little pain.

In one of the cases of inguinal buboes, the whole force of the disease seemed to be collected into the lymphatic system. The patient walked about, and had no fever nor pain in any part of his body, except in his groin. In another case which came under my care, a swelling and pain extended from the groin along the spermatic cord into one of the testicles.

These glandular swellings were not peculiar to our late epidemic. They occurred in the yellow fever of Jamaica as described by Dr Williams, and always with a happy issue of the disorder \*. A similar concentration of the contagion of the plague in the lymphatic glands, is taken notice of by Dr Patrick Russel.

VIII. The SKIN exhibited many marks of this fever. It was preternaturally warm in some cases, but it was often preternaturally cool. In some there was a distressing coldness in the limbs for two or three days. The yellow colour, from which this fever had derived its name, was not universal. It seldom appeared where purges had been given in sufficient doses. The yellowness rarely appeared before the third, and generally about the fifth or seventh day of the fever. Its early appearance always denoted great danger. It sometimes appeared first on the neck and breast, instead of the eyes. In one of my patients it discovered itself first behind one of his ears, and on the crown of his head, which had been bald for several years. The remissions and exacerbations of the fever seemed to have an influence upon this colour, for it appeared and disappeared altogether, or with fainter or deeper shades of yellow, two or three times in the course of the disorder. The eyes seldom escaped a yellow tinge ; and yet I saw a number of cases in which the disease appeared with uncommon malignity and danger, without the presence of this symptom. Two very different causes have been supposed to produce this yellow colour of the skin. By some it has been attributed to the dissolution of the blood ; but I shall say hereafter, that the blood was seldom dissolved in this fever. The yellow colour, moreover, occurred in those cases where the blood exhibited an inflammatory crust, and it continued in many persons for five or six weeks after

\* *Essay on the Bilious or Yellow Fever*, p. 35.

their recovery. From these facts it is evident, that the yellowness was in all cases the effect of an absorption and mixture of bile with the blood.

There was a clay-coloured appearance in the face in some cases, which was very different from the yellow colour which has been described. It occurred in the last stage of the fever, and in no instance did I see a recovery after it.

There were eruptions of various kinds on the skin, each of which I shall briefly describe.

1. I met with two cases of an eruption on the skin, resembling that which occurs in the scarlet fever. Dr Hume says, pimples often appear on the pit of the stomach in the yellow fever of Jamaica. I examined the external region of the stomach in many of my patients, without discovering this symptom.

2. I met with one case, in which there was an eruption of watery blisters, which, after bursting, ended in deep, black sores.

3. There was an eruption about the mouth in many people, which ended in scabs, similar to those which take place in the common bilious fever. They always afforded a prospect of a favourable issue of the disease.

4. Many persons had eruptions which resembled moschetto bites. They were red and circumscribed. They appeared chiefly on the arms, but they sometimes extended to the breast. Like the yellow colour of the skin, they appeared and disappeared two or three times in the course of the disorder.

5. Petechiae were common in the latter stage of the fever. They sometimes came on in large, and at other times in small red blotches; but they soon

acquired a dark colour. In most cases, they were the harbingers of death.

6. Several cases of carbuncles, such as occur in the plague, came under my notice. They were large and hard swellings on the limbs, with a black apex, which, upon being opened, discharged a thin, dark-coloured, bloody matter. From one of these malignant sores, an hemorrhage took place, which precipitated the death of the amiable widow of Dr John Morris.

7. A large and painful anthrax on the back succeeded a favourable issue of the fever in the Rev. Dr Blackwell.

8. I met with a woman who shewed me the marks of a number of small boils on her face and neck, which accompanied her fever.

Notwithstanding this disposition to cutaneous eruptions in this disorder, it was remarkable that blisters were much less disposed to mortify than in the common nervous fever. I met with only one case in which a deep-seated ulcer followed the application of blisters to the legs. Such was the insensibility of the skin in some people, that blisters made no impression upon it.

IX. How far the *blood* may be considered as the vehicle of the contagion, it is not my business at present to enquire; nor shall I in this place mention the different appearances it exhibited when drawn from a vein. It has been supposed to undergo a change from a healthy to a putrid state; and many of the symptoms of the fever which have been described, particularly the hemorrhagies and eruptions on the skin, have been ascribed to this supposed putrefaction of the blood. It would be easy to multi-

ply arguments to prove, that no such thing as putrefaction can take place in the blood ; and that the symptoms which have been supposed to prove its existence, are all effects of a sudden, violent, and rapid inflammatory action, or pressure upon the blood-vessels ; and hence the external and internal hemorrhagies. The petechiae on the surface of the skin depend upon the same cause. They are nothing but effusions of serum or red blood, from a rupture or preternatural dilatation of the capillary vessels.\* The smell emitted from persons affected by this disease, was far from being of a putrid nature ; and if this had been the case, it would not have proved the existence of putrefaction in the blood ; for a putrid smell is often discharged from the lungs, and from the pores in sweat, which is wholly unconnected with a putrid, or perhaps any other morbid state of the blood. There are plants which discharge an odor, which conveys to the nose a sensation like that of putrefaction ; and yet these plants exist at the same time, in a state of the most healthy vegetation : nor does the early putrid smell of a body which perishes with this fever, prove a putrid change to have taken place in the blood before death. All animals which die suddenly, and without loss of blood, are disposed to a speedy putrefaction. This has long been remarked in animals that have been killed after a chace, or by lightning. The poisonous air called *samiel*, which is described by Chardin, produces, when it destroys life, instant putrefaction. The bodies of men who die of violent passions, or after strong convulsions, or even after great muscular exertion, putrefy in a few hours after death. The

\* See Wallis's edition of Sydenham, Vol. I. p. 165. Vol. II. p. 52, 94, 98, 350. De Haen's Ratio Medendi, Vol. II. p. 162. Vol. IV. p. 172. Gaubii Pathologia, § 498, and Dr Sybert's inaugural dissertation, entitled "An attempt to Disprove the doctrine of the Putrefaction of the Blood in Living Animals," published in Philadelphia in 1793.

healthy state of the body depends upon a certain state of arrangement in the fluids. A derangement of these fluids is the natural consequence of the violent and rapid motions, or of the undue pressure upon the solids, which have been mentioned. It occurs in every case of death from indirect debility, whether it be induced by the excessive stimulus of contagion, by the volatile vitriolic acid, which is supposed to constitute the destructive samiel wind, or by violent commotions excited in the body by external or internal causes. The practice among fishermen, in some countries, of breaking the heads of their fish, as soon as they are taken out of the water, in order to retard their putrefaction, proves the truth of the explanation I have given of its cause, soon after death. The sudden extinction of life in the fish, prevents those convulsive or violent motions which induce sudden *dissorganization* in their bodies. It was remarkable that putrefaction took place most speedily after death from the yellow fever, where the commotions of the system were not relieved by evacuations. In those cases where purges and bleeding had been used, putrefaction did not take place sooner after death than is common in any other febrile disease, under equal circumstances of heat and air.

There is a fact mentioned by Dr Ferriar, from Dr Hamilton, late professor of anatomy at Glasgow, which may seem at first sight to militate against the facts I have mentioned. He says that he had observed bodies which were brought into the dissecting room, that had petechiæ on them, were longer in putrefying than any others. The fevers of which the poor (the common subjects of dissection) die, are generally of the low nervous kind. Great *direct* debility is the characteristic of these fevers. The petechiæ which occur in them, appear in the last stage of this direct debility. They are the effect, not of too much im-

petus in the blood, as in the yellow fever, but of a defect or total absence of it in the last hours of life. The slow progress of the body to putrefaction after death, in the instances mentioned by Dr Hamilton, seems to depend upon the same cause as that to which I have ascribed it in those cases of death from the yellow fever, in which evacuations had been used, viz. *direct debility*. In the former cases this slowness of putrefaction is induced by nature—in the latter by art. The effects of debility from both causes, are, notwithstanding, the same.

Thus have I described the symptoms of this fever. From the history I have given, it appears, that it counterfeited nearly all the acute and chronic diseases, to which the human body is subject. An epitome, both of its symptoms and its theory, is happily delivered by Dr Sydenham in the following words. After describing the epidemic cough, pleurisy, and peripneumony of 1675, he adds, “ But in other epidemics, the symptoms are so slight from the disturbance raised in the blood by the morbific particles contained in the mass, that nature being in a manner *oppreſſed*, is rendered unable to produce *regular* symptoms that are suitable to the disease; and almost all the phænomena that happen are *irregular*, by reason of the entire *subversion* of the animal œconomy; in which case the fever is often *depreſſed*, which, of its own nature, would be very high. Sometimes also fewer signs of a fever appear than the nature of the disease requires, from a translation of the malignant cause, either to the nervous system, to some other parts of the body, or to some of the juices not contained in the blood; whilst the morbific matter is yet turgid \*.”

The disease ended in death in various ways. In some it was sudden; in others it came on by gradual approaches. In some the last hours of life

\* Wallis's edition, Vol. I. p. 344.

were marked with great pain, and strong convulsions; but in many more, death seemed to insinuate itself into the system, with all the gentleness of natural sleep. Mr Powell expired with a smile on his countenance. Dr Griffitts informed me, that Dr Johnson exhibited the same symptom in the last hours of his life. This placid appearance of the countenance, in the act of dying, was not new to me. It frequently occurs in diseases which affect the brain and nerves. I lost a patient three years ago in the gout, who not only smiled, but laughed, a few minutes before he expired.

I proceed now to mention some peculiarities of the fever which could not be brought in under any of the foregoing heads.

In every case of this disorder which came under my notice, there were evident remissions, or intermissions of the fever, or of such symptoms as were substituted for fever. I have long considered, with Mr Senac, a *tertian* as the only original type of all fevers. The bilious yellow fever indicated its descent from this parent disorder. I met with many cases of regular tertians, in which the patients were so well on the intermediate days, as to go abroad. It appeared in this form in Mr Van Berkel, the minister of the United Netherlands. Nor was this mild form of the fever devoid of danger. Many died who neglected it as a trifling disorder, or who took the common remedies for intermittents to cure it. It generally ended in a remittent, before it destroyed the patient. The tertian type discovered itself in some people after the more violent symptoms of the fever had been subdued, and continued in them for several weeks. It changed from a tertian to a quartan type in Mr Thomas Willing, nearly a month after his recovery from the more acute and inflammatory symptoms of the disorder.

It is nothing new for a malignant fever to appear in the form of a tertian. It is frequently the garb

of the plague. Riverius describes a tertian fever which proved fatal on the third day, which was evidently derived from the same exhalation which produced a continual malignant fever \*.

The remissions were more evident in this, than in the common bilious fever. They generally occurred in the forenoon. It was my misfortune to be deprived, by the great number of my patients, of that command of time which was necessary to watch the exacerbations of this fever under all their various changes, as to time, force, and duration. From all the observations that were suggested by visits, at hours that were seldom left to my choice, I was led to conclude, that the fever exhibited in different people, all that variety of forms which has been described by Dr Cleghorn, in his account of the tertian fever of Minorca. A violent exacerbation on even days was evidently attended with more danger than on odd days. The same thing was observed by Dr Mitchell, in the Yellow Fever of Virginia, in the year 1741. "If (says he) the exacerbations were "on equal days, they generally died in the third "paroxysm, or the 6th day, but if on unequal days, "they recovered on the 7th."

The deaths which occurred on the 3d, 5th, and 7th days, appeared frequently to be the effects of the commotions or depression, produced in the system on the 2d, 4th, and 6th days.

The remission on the third day was frequently such as to beget a belief that the disease had run its course, and that all danger was over. A violent attack of the fever on the 4th day, removed this deception, and if a relaxation had taken place, in the use of proper remedies on the third day, death frequently occurred on the fifth or the seventh.

The termination of this fever in life, and death, was much more frequent on the 3d, 5th, 7th, 9th,

\* De Febri Pestilenti, vol. xi. p. 93.

and 11th days, than is common in the mild remitting fever. Where death occurred on the even days, it seemed to be the effect of a violent paroxysm of the fever, or of great vigour of constitution, or of the force of medicines, which protracted some of the motions of life beyond the close of the odd days which have been mentioned.

I think I observed the fever to terminate on the third day more frequently in August, and during the first ten days of September, than it did after the weather became cool. In this it resembled the common bilious remittent of our city, also the simple tertians described by Dr Cleghorn \*. The danger seemed to be in proportion to the tendency of the disease to a speedy crisis; hence more died in August, in proportion to the number who were affected, than in September or October, when the disease was left to itself. But, however strange after this remark it may appear, the disease yielded to the remedies which finally subdued it, more speedily and certainly, upon its first appearance in the city, than it did two or three weeks afterwards.

The disease continued for fifteen, twenty, and even thirty days, in some people. Its duration was much influenced by the weather, and by the use or neglect of certain remedies (to be mentioned hereafter) in the first stage of the disorder.

It has been common with authors to divide the symptoms of this fever into three different stages. The order I have pursued in the history of those symptoms, will render this division unnecessary. It will I hope be more useful to divide the patients affected with the disorder into three classes.

The *first* includes those in whom the stimulus of the contagion produced the symptoms of indirect

\* Diseases of Minorca, p. 185.

debility, such as coma, languor, sighing, a disposition to syncope, and a weak, or slow pulse.

The *second* includes those in whom the contagion acted with less force, producing great pain in the head, and other parts of the body; delirium, vomiting, heat, thirst, and a quick, tense, or full pulse, with obvious remissions or intermissions of the fever.

The *third* class includes all these persons in whom the stimulus of the contagion acted so feebly, as not to confine them to their beds or houses. This class of persons affected by the yellow fever, was very numerous. Many of them recovered without medical aid, or by the use of domestic prescriptions; many of them recovered in consequence of a spontaneous diarrhoea, or plentiful sweats; many were saved by moderate bleeding, and purging; while some died, who conceived their complaints to be occasioned by a common cold, and neglected to take proper care of themselves, or to use the necessary means for their recovery. It is not peculiar to the contagion of the yellow fever, to produce this feeble operation on the system. It has been observed in the southern states of America, that in those seasons in which the common bilious fever is epidemic, "no body is quite well," and that what are called in those states "inward fevers," are universal. The small pox, even in the natural way, does not always confine the patient; and thousands pass through the plague, without being confined to their beds or houses. Dr Hodges prescribed for this class of patients, in his parlour in London, in the year 1665, and Dr Patrick Russel did the same from a chamber-window fifteen feet above the level of the street at Aleppo. Notwithstanding the mild form the plague put on in these cases, it often proved fatal, according to Dr Russel. I have introduced these facts chiefly with a view of preparing the reader to reject the opinion

that we had two species of fever in the city at the same time; and to shew, that the yellow fever appears in a more simple form than with "strongly marked" characters; or, in other words, with a yellow skin, and a black vomiting.

It was remarkable, that this fever always found out the weak part of every constitution it attacked. The head, the lungs, the stomach, the bowels, and the limbs, suffered more or less, according as they were more or less debilitated by previous inflammatory, or nervous diseases, or by a mixture of both, as in the gout.

I have before remarked, that the influenza, the scarlatina, and a mild bilious remittent, prevailed in the city before the yellow fever made its appearance. In the course of a few weeks they all disappeared, or appeared with symptoms of the yellow fever; so that after the first week of September, it was the solitary epidemic of the city.

The only case like influenza which I saw after the 5th of September, was in a girl of 14 years of age, on the 13th of the month. It came on with a sneezing and cough. I was called to her on the third day of her disorder. The instant I felt her pulse, I pronounced her disease to be the yellow fever. Her father was offended with this opinion, although he lived in a highly infected neighbourhood, and objected to the remedies I prescribed for her. In a few days she died. In the course of ten days, her father and sister were infected, and both died, I was informed, with the usual symptoms of the yellow fever.

It has been an axiom in medicine, time immemorial, that no two contagious fevers of unequal force can exist long together in the same place. As this axiom seems to have been forgotten by many of the physicians of Philadelphia, and as the ignorance or neglect of it, led to that contrariety of opinion and practice, which unhappily took place in the treatment of the disorder, I hope I shall be excused by

those physicians to whom this fact is as familiar as the most simple law of nature, if I fill a few pages with proofs of it, from practical writers.

Thucydides long ago remarked that the plague chased all other diseases from Athens, or obliged them to change their nature, by assuming some of its symptoms.

Dr Sydenham makes the same remark upon the plague in London in 1665. Dr Hedges, in his account of the same plague, says, that “at the rise of the plague all other distempers went into it; but, at its degension, that it degenerated into others, as inflammations, headach, quinsies, dysentries, small-pox, measles, fevers, and hecticks, wherein the plague yet predominated \*.”

During the prevalence of the plague in Grand Cairo, no sporadic disease of any kind makes its appearance. The same observaaion is made by Sauvage, in his account of the plague at Alais, in the province of Languedoc †.

The small-pox, though a disease of less force than the plague, has often chased it from Constantinople, probably from its infecting at a greater distance than the plague. But this exclusive prevalence of a single epidemic is not confined to the plague and small-pox. Dr Sydenham’s writings are full of proofs of the dominion of febrile diseases over each other: Hence, after treating upon a symptomatic pleurisy, which sometimes accompanied a slow fever in the year 1675, and which had probably been injudiciously treated by some of those physicians who prescribe for the name of a disease, he delivers the following aphorism: “Whoever, in the cure of fevers, hath not always in view the constitution of the year, inasmuch as it tends to produce some particular epi-

\* Dr Hodge’s Account of the Plague in London, p. 26.

† Sed hoc observatu dignum fuit, omnes alios morbos acutos, durante peste filuisse, et omnes morbos acutos e pestis genere suisse. Nosologia Methodica, vol. i. p. 416.

nic disease, and likewise to reduce all cotemporary diseases to its own form and likeness, proceeds in an uncertain and fallacious way \*." It appears further, from the writings of this excellent physician, that where the monarchy of a single disease was not immediately acknowledged, by a sudden retreat of all cotemporary diseases, they were forced to do homage to it, by wearing its livery. It would be easy to multiply proofs of this assertion, from the numerous histories of epidemics which are to be found in his works. I shall only mention one or two of them. A continual fever, accompanied by a dry skin, had prevailed, for some time, in the city of London. During the continuance of this fever, the regular small pox made its appearance. It is peculiar to the small pox, when of a distinct nature, to be attended by irregular sweats before the eruption of the pock. The continual fever now put on a new symptom. It was attended by sweats in its first stage, exactly like those which attended the eruptive fever of the small-pox †. This despotism of a powerful epidemic extended itself to the most trifling indispositions. It even blended itself, Dr Sydenham tells us, with the commotions excited in the system by the suppression of the lochia, as well as with the common puerperile fever ‡. Dr Morton has left testimonies behind him in different parts of his works, which establish, in the most ample manner, the truth of Dr Sydenham's observations. Dr Huxham describes the small-pox as blending some of its symptoms with those of a slow fever at Plymouth in the year 1729 §. Dr Cleghorn mentions a constitution of the air at Minorca, so highly inflammatory, " that not only tertian fevers, but even a common hurt or bruise, re-

\* Vol. i. p. 340.

† Vol. j. p. 352.

‡ Vol. ii. p. 164. see also p. i. p. 109, 122, 204, 212, 233, 274, 355, 358, 9, and 436.

§ De Aere et morb. epidem. p. 33. 34.

quired more plentiful evacuations than ordinary \*." Riverius informs us, in his history of a pestilential fever that prevailed in France, that " it united itself with phrenitis, angina, pleurify, peripneumony, hepatitis, dysentery, and many other diseases †."

The bilious remitting fever which prevailed in Philadelphia in 1780, chased away every other febrile disease ; and the scarlatina anginosa, which prevailed in our city in 1783 and 1784, furnished a striking proof of the influence of epidemics over each other. In the account which I published of this disease, in the year 1789, there are the following remarks :

" The intermitting fever, which made its appearance in August, was not lost during the month of September. It continued to prevail, but with several peculiar symptoms. In many persons it was accompanied by an eruption on the skin, and a swelling of the hands and feet. In some it was attended with sore throat, and pains behind the ears. Indeed such was the prevalence of the contagion which produced the scarlatina anginosa, that many hundred people complained of sore throats, without any other symptom of indisposition. The slightest exciting cause, and particularly cold, seldom failed of producing the disorder ‡."

I shall mention only one more authority in favour of the influence of a single epidemic upon diseases. It is taken from Mr Clark's essay on the epidemic disease of lying-in women, of the years 1787 and 1788. " There does not appear to be any thing in a par-turient state, which can prevent women from being affected by the general causes of disease at that time ; and should they become ill, their complaints will probably partake of the nature of the reigning epidemic §." I have said that the fevers sometimes

\* Page 285.

† De Febre Pestilenti, vol. ii. p. 95.

‡ Medical Inquiries and Observations, Lond. edit. Vol. I. p. 122.

§ Page 28.

put on the symptoms of dysentry, pleurify, rheumatism, cholic, palsy, and even of the locked-jaw. That these were not original diseases, but symptomatic affections only of the reigning epidemic, will appear from other histories of bilious fevers. Dr Balfour tells us, in his account of the intestinal remitting fever of Bengal \*, that it often appeared with symptoms of dysentery, rheumatism, and pleurify. Dr Cleghorn and Dr Lind mention many cases of the bilious fever appearing in the form of a dysentery. Dr Clark ascribes the dysentery, the diarrhoea, the colic, and even the palsy, to the same contagion which produced the bilious fever in the East Indies †; and Dr Hunter, in his treatise upon the diseases of Jamaica, mentions the locked jaw as one of its occasional symptoms. Even the different grades of this fever, from the mildest intermittent to the most acute continual fever, have been distinctly traced by Lancissi to the same marsh exhalation ‡.

However irrefragably these numerous facts and authorities establish the assertion of the prevalence of but one powerful epidemic at a time, the proposition will receive fresh support, from attending to the effects of two impressions of unequal force made upon the system at the same time: only one of them is felt: hence the gout is said to cure all other diseases. By its superior pain it destroys sensations of a less painful nature. The small-pox and measles have sometimes existed together in the body; but this has, I believe, seldom occurred, where one of them has not been the predominating disease §. In this respect, this combination of epidemics only conforms to the general law which has been mentioned.

\* Page 132.

† Observations on the Diseases in long Voyages to the East Indies, Vol. I. p. 13, 14, 48, 151. Vol. II. p. 99, 318. and 320.

‡ Lib. II. Cap. V.

§ Hunter on the Venereal Disease, introduction, p. 3.

I beg pardon for the length of this digression. I did not introduce it to expose the mistakes of those physicians who found as many diseases in our city, as the yellow fever had symptoms, but to vindicate myself from the charge of innovation, in having uniformly and unequivocally asserted, after the first week in September, that the yellow fever was the only febrile disease which prevailed in the city. I shall hereafter mention some facts upon the subject of the extent of the contagion, which will add such weight to the assertion, as to render the disbelief of it, as much a mark of a deficiency of reason, as it is of reading and observation.

Science has much to deplore from the multiplication of diseases. It is as repugnant to truth in medicine, as polytheism is to truth in religion. The physician who considers every different affection of the different systems in the body, or every affection of different parts of the same system, as distinct diseases, when they arise from one cause, resembles the Indian or African savage, who considers water, dew, ice, frost, and snow, as distinct essences: while the physician, who considers the morbid affections of every part of the body, (however diversified they may be in their form or degrees) as derived from one cause, resembles the philosopher, who considers dew, ice, frost, and snow, as different modifications of water, and as derived simply from the absence of heat.

Humanity has likewise much to deplore from this paganism in medicine. The sword will probably be sheathed for ever, as an instrument of death, before physicians will cease to add to the mortality of mankind, by prescribing for the names of diseases.

The facts I have delivered upon this subject will admit of a very important application to the cure, not only of the yellow fever, but of all other acute and dangerous epidemics. I shall hereafter assign a final cause for the law of epidemics which has been mentioned, which will discover an union of the good-

ness of the Supreme Being with one of the greatest calamities of human life.

All ages were affected by this fever; but persons between fourteen and forty years of age, were most subject to it. Many old people had it, but it was not so fatal to them as to robust persons in middle life. It affected children of all ages. I met with a violent case of the disorder, in a child of four months, and a moderate case of it, in a child of only ten weeks old. The latter had caught it from its mother. It had a deep yellow skin. Both these children recovered.

The proportion of children who suffered by this fever may be conceived from a single fact. Seventy five persons were buried in the grave-yard of the Swedish Church in the months of August, September, and October, twenty four of whom were children. They were buried chiefly in September and October; months in which children generally enjoy good health in our city.

Men were more subject to the disease than women. Pregnancy seemed to expose women to it.

The refugees from the French West-Indies, universally escaped it. This was not the case with the natives of France, who had been settled in the city.

It is nothing new for epidemics to affect persons of one nation, and to pass by persons of other nations in the same city or country. At Nimuguen in the year 1736, Deigner informs us that the French people, (two old men excepted), and the Jews, escaped a dysentery which was universal among persons of all other nations. Ramazini tells us that the Jews at Modena escaped a certain fever which affected nearly all the other inhabitants of the town. Shenkius says that the Dutch and Italians escaped a plague which prevailed for two years in one of the towns of Switzerland; and Dr Bell, in an inaugural dissertation published at Edinburgh in 1779, remarks that the jail fever, which attacked the soldiers of the Duke of Bucc-

cleugh's regiment, spared the French prisoners who were guarded by them. It is difficult to account for these facts. However numerous their causes may be, a difference in diet, which is as much a distinguishing mark of nations as dress or manners, will probably be found to be one of them.

From the accounts of the yellow fever which had been published by many writers, I was led to believe that the negroes in our city would escape it. In consequence of this belief, I published the following extract from Dr Lining's history of the yellow fever, as it had four times appeared in Charleston in South-Carolina.

*For the American Daily Advertiser.*

"IT has been remarked, that the *black people* have in no one instance been infected with the malignant fever which now prevails in our city. The late Dr Lining, of South-Carolina, long ago made the same remark." "There is something very singular (says the Doctor) in the constitution of the Negroes which renders them not liable to this fever; for though many of them were as much exposed as the nurses to the infection, yet I never knew of one instance of this fever among them, though they are equally subject with the white people to the bilious fever \*."

"The only design of this remark is, to suggest to our citizens the safety and propriety of employing black people to nurse and attend persons infected by this fever; also, to hint to the black people, that a noble opportunity is now put into their hands, of manifesting their gratitude to the inhabitants of that city, which first planned their emancipation from slavery, and who have since afforded them so much protection and support, as to place them, in point of civil and religious privileges, upon a footing with themselves."

\* Essays and Observations, physical and literary, Vol. xi. p. 409.

A day or two after this publication, the following letter from the Mayor of the city, to Mr Claypoole the printer of the Mail, appeared in his paper.

“ SIR,—It is with peculiar satisfaction that I communicate to the public, through your paper, that the AFRICAN SOCIETY, touched with the distresses which arise from the present dangerous disorder, have voluntarily undertaken to furnish nurses to attend the afflicted : and that by applying to ABSALOM JONES and WILLIAM GRAY, both members of that society, they may be supplied.

September 6th, 1793.

MATTH. CLARKSON,  
*Mayor.*”

It was not long after these worthy Africans undertook the execution of their humane offer of services to the sick, before I was convinced I had been mistaken. They took the disease, in common with the white people, and many of them died with it. I think I observed the greatest number of them to sicken after the mornings and evenings became cool. A large number of them were my patients. The disease was lighter in them, than in white people. I met with no case of hemorrhage in a black patient.

The tobacconists, and persons who used tobacco, did not escape the disease. I observed snuff-takers to be more devoted to their boxes than usual, during the prevalence of the fever.

I have remarked formerly that servant-maids suffered much by the disease. They were the only patients I lost in several large families. I ascribe their deaths to the following causes :

1<sup>st</sup>. To the great indirect debility induced upon their systems by fatigue in attending their masters and mistresses, or their children. Indirect debility, according to its degrees and duration, seems to have

had the same effect upon the mortality of this fever, that it has upon the mortality of an inflammation of the lungs. When it is moderate and of short duration, it predisposes only to a common pneumonia; but when it is violent and protracted, in its degrees and duration, it predisposes to a pulmonary consumption.

2dly. To their receiving large quantities of contagion into their bodies, and in a most concentrated state, by being obliged to perform the most menial offices for the sick, and by washing, as well as removing, infected linen, and the like.

3dly. To their being left more alone in confined or distant rooms, and thereby suffering from depression of spirits, or the want of a punctual supply of food and medicines.

There did not appear to be any advantage from smelling vinegar, tar, camphor, or volatile salts, in preventing the disorder. Bark and wine were equally ineffectual for that purpose. I was called to many hundred people who were infected after using one or more of them. Nor did the white-washing of walls secure families from the action of the contagion. I am disposed to believe garlick was the only substance that was in any degree useful, in preventing the disorder. I met with several persons who chewed it constantly, and who were much exposed to the contagion, without being infected. All other substances seemed to do harm, by begetting a false confidence in the mind, to the exclusion of more rational preservatives. I have suspected further, that such of them as were of a volatile nature, helped to spread the disease by affording a vehicle for the contagion through the air.

There was great mortality in all those families who lived in wooden houses. Whether this arose from the small size of these houses, or from the

want of cleanliness of the people who occupied them, or from the contagion becoming more accumulated, by adhering to the wood, I am unable to determine. Perhaps it was the effect of the co-operation of all three of those causes.

I have said formerly that intemperance in drinking predisposed to the disease; but there were several instances of persons having escaped it who were constantly under the influence of strong drink. The stimulus of ardent spirits probably predominated over the stimulus of the contagion, and thus excited an artificial fever which defended the system from that which was epidemic.

I heard of some sea-faring people, who lived on board their vessels, who escaped the disease. The smell of the tar was supposed to have preserved them; but from its being ineffectual in other cases, I was led to ascribe their escape to the infected air of the city being diluted by a mixture with the pure air that came from the water.

Many people who were infected in the city, were attacked by the disease in the country; but they propagated it in very few instances, even to persons who slept in the same room with them.

Dr Lind informs us that many persons escaped the yellow fever which prevailed in Pensacola in the year 1765, by retiring to the ships which lay in the harbour, and that when the disease had been taken, the pure air of the water changed it into an intermitting fever.\* The same changes have frequently been produced in malignant fevers, by fending patients infected with them from the foul air of the country.

Persons confined in the House of Employment, in the Hospital, and in the Jail, were preserved from the fever. The airy and remote situation of those buildings, was probably the chief means of their pre-

\* Diseases of Warm Climates, p. 169.

servation. Perhaps they derived additional security from their simple diet, their exemption from hard labour, and from being constantly sheltered from heat and cold.

Several families who shut up their front and back doors and windows, and avoided going out of their houses except to procure provisions, escaped the disorder.

I have taken some pains to ascertain whether any class of tradesmen escaped the fever, or whether there was any species of labour which protected from it. The result of my inquiries is as follows: Three butchers only, out of nearly one hundred who remained in the city, died with the disorder. Many of them attended the markets every day. Two painters, who worked at their business during the whole time of the prevalence of the fever, and in exposed situations, escaped it. Out of forty scavengers who were employed in collecting and carrying away the dirt of the streets, only one caught the fever and died. Very few grave-diggers, compared with the number who were employed in that business, were infected; and it is well known, that scarcely an instance was heard of persons taking the disease, who were constantly employed in digging cellars. The fact is not new, that grave-diggers escape the contagion of malignant fevers. It is taken notice of by Dr Clark. There seems to be something in the fresh earth which attracts or destroys by mixture, contagion of every kind. Clothes, infected by the small-pox, are more certainly putrified by being buried under ground, than in any other way. Even poisons are rendered inert, by the action of the earth upon them. Dogs have long ago established this fact, by scratching a hole in the ground, and burying their limbs or noses in it, when bitten by poisonous snakes. The practice, I have been told, has been imitated with success by the settlers upon new lands in several parts of the United States.

It was said by some physicians, in the public papers, that the neighbourhood of the grave-yards was more infected than other parts of the city. The reverse of this assertion was true in several cases, owing probably to the line of communication of the contagion being broken by the absence of houses, and to its being diluted and weakened by its mixture with the air of the grave-yards ; for this air was pure compared with that which stagnated in the streets.

It was said further, that the disease was propagated by the inhabitants assembling on Sundays for public worship ; and, as a proof of this assertion, it was reported, that the deaths were more numerous on Sundays than on other days ; occasioned by the contagion received on one Sunday, producing death on the succeeding first day of the week. The register of the deaths shows that this was not the case. I am disposed to believe that fewer people sickened on Sundays, than on any other day of the week ; owing to the general rest from labour, which I have before said was one of the exciting causes of the disease. From some facts, to be mentioned presently, it will appear probable, that places of public worship, in consequence of their size, as well as of their being shut up during the greatest part of the week, were the freest from contagion of any houses in the city. It is agreeable to discover in this, as well as in all other cases of public and private duty, that the means of health, and moral happiness, are in no one instance opposed to each other.

There were for several weeks two sources of infection ; viz. exhalation and contagion. The exhalation infected at the distance of three and four hundred yards ; while the contagion infected only across the streets. The more narrow the street, the more certainly the contagion infected. Few escaped it in alleys. After the 15th of September, the atmosphere of every street in the city was loaded with contagion ; and there were few citizens in apparent good health,

who did not exhibit one or more of the following marks of its presence in their bodies.

1. A yellowness in the eyes, and a sallow colour upon the skin.

2. A preternatural quickness in the pulse. I found but two exceptions to this remark, out of a great number of persons whose pulses I examined. In one of them it discovered several preternatural intermissions in the course of a minute. This quickness of pulse occurred in the negroes, as well as in the white people. I met with it in a woman who had had the yellow fever in 1762. In two women, and in one man above 70, the pulse beat upwards of 90 strokes in a minute. This preternatural state of the pulse, during the prevalence of a pestilential fever in persons in health, is taken notice of by Revereius\*.

3. Frequent and copious discharges by the skin of yellow sweats. In persons who were much exposed to the contagion, these sweats sometimes had an offensive smell, resembling that of the washings of a gun.

4. A scanty discharge of high coloured or turbid urine.

5. A deficiency of appetite, or a greater degree of it than was natural.

6. Costiveness.

7. Wakefulness.

8. Head-ach.

\* "Pulsus sanorum pulsibus similes admodum, periculosi." *De Febre Pestilenti*, p. 114.

9. A preternatural dilatation of the pupils — This was universal. I was much struck in observing the pupil in one of the eyes of a young man who called upon me for advice, to be of an oblong figure. Whether it was natural, or the effect of the contagion acting on his brain, I could not determine.

It will be thought less strange, that the contagion should produce these changes in the systems of persons who resided constantly in the city, when I add, that many country people, who spent but a few hours in the streets in the day, in attending the markets, caught the disease, and sickened and died after they returned home; and that others, whom business compelled to spend a day or two in the city, during the prevalence of the fever, but who escaped an attack of it, declared that they were indisposed during the whole time, with languor or head-ach.

I was led to observe and record the above effects of the contagion upon persons in apparent good health, by a fact I met with in Dr Mitchell's history of the yellow fever in Virginia in the year 1741. In that fever, blood drawn from a vein was always dissolved. The same state of the blood was observed in many persons who had been exposed to the contagion, who discovered no other symptom of the disease.

A woman, whom I had formerly cured of a mania, who lived in an infected neighbourhood, had a fresh attack of that disorder, accompanied by an unusual menstrual flux. I ascribed both these complaints to the action of the contagion upon her system.

Citizens, thus impregnated with the contagion, communicated it in several instances to their country friends. The disease produced in this way was very light, amounting, in all the cases that came under my notice, to little more than a sickness at stomach, or vomiting.

The smell of the contagion, as emitted from a patient in a clean room, was like that of the small-pox, but in most cases of a less disagreeable nature. Pu-

trid smells in sick rooms were the effects of a mixture of the contagion with some filthy matters. In small rooms, crowded in some instances with four or five sick people, there was an effluvia that produced giddiness, sickness at stomach, a weakness of the limbs, faintness, and in some cases a diarrhoea. I met with a fetid breath in one patient, which was not the effect of that medicine which sometimes produces it.

The contagion adhered to all kinds of cloathing, and seemed to be propagated by them. It was in no instance communicated by means of paper; a circumstance which contributed both to lessen and encrease the distress produced by the disease, by enabling the citizens to keep up an intercourse by letters with their country friends.

The state of the atmosphere, during the whole month of September, and the first two weeks in October, favoured the accumulation of the contagion in the city.

The register of the weather shews how little the air was agitated by winds during the above time. In vain were changes in the moon expected to alter the state of the air. The light of the morning mocked the hopes that were raised by a cloudy sky in the evening. The sun ceased to be viewed with pleasure. Hundreds sickened every day beneath the influence of his rays; and even where they did not excite the disease, they produced a languor in the body unknown to the oldest inhabitant of the city, at the same season of the year.

A meteor was seen at two o'clock in the morning on or about the twelfth of September. It fell between Third-street and the Hospital, nearly in a line with Pine-street. Moschetoes (the usual attendants of a sickly autumn) were uncommonly numerous. Here and there a dead cat added to the impurity of the air of the streets; for many of those animals perished with hunger in the city, in consequence of

so many houses being deserted by the inhabitants who had fled into the country.

It appears further, from the register of the weather, that there was no rain between the 25th of August and the 15th of October, except a few drops, hardly enough to lay the dust of the streets on the 9th of September, and the 12th of October. In consequence of this drought, the springs and wells failed in many parts of the country. The dust in some places extended two feet below the surface of the ground. The pastures were deficient, or burnt up. There was a scarcity of autumnal fruits in the neighbourhood of the city. But while vegetation drooped or died, from the want of moisture in some places, it revived with preternatural vigour from unusual heat in others. Cherry-trees blossomed, and apple, pear, and plum-trees, bore young fruit in several gardens in Trenton, thirty miles from Philadelphia, in the month of October.

However inoffensive uniform heat, when agitated by gentle breezes, may be, there is, I believe, no record of a dry, warm and stagnating air, having existed for any length of time without producing diseases. Hippocrates, in describing a pestilential fever, says the year in which it prevailed, was without a breeze of wind \*. The same state of the atmosphere for six weeks, is mentioned in many of the histories of the plague which prevailed in London in 1665. Even the sea-air itself becomes unwholesome by stagnating; hence Dr Clark informs us, that sailors become sickly after long calms in East India voyages †. Sir John Pringle delivers the following aphorism, from a number of similar observations upon this subject. " When the heats come on soon, and continue throughout autumn, not moderated by winds, or

\* " Sine aura, usque annus fuit."

*Epid. 3.*

† Vol. i. p. 5.

rains, the season proves sickly, distempers appear early, and are dangerous ‡."

Who can review this account of the universal diffusion of the contagion of this disease, its universal effects upon persons apparently in good health, and its accumulation and concentration, in consequence of the calmness of the air, and believe that it was possible for a febrile disease to exist at that time in our city that was not derived from this contagion?

The West India writers upon the yellow fever have said, that it is seldom taken twice, except by persons who have spent some years in Europe or America, in the interval between its first and second attack. I directed my enquiries to this question, and I now proceed to mention the result of them. I met with five persons, during the prevalence of the disease, who had had it formerly: two of them in the year 1741, and three in 1762, who escaped it in 1793, although they were all more or less exposed to the contagion. One of them felt a constant pain in her head while the disease was in her family. Four of them were aged, and of course less liable to be acted upon by the contagion, than persons in early or middle life. Mr Thomas Shields furnished an unequivocal proof, that the disease could be taken after an interval of many years. He had it in the year 1762, and narrowly escaped from a violent attack of it last year. Cases of reinfection were very common during the prevalence of this fever. They occurred most frequently, where the first attack had been light. But they succeeded attacks that were severe in Dr Griffitts, Dr Mease, my pupil Mr Coxe, and several others, whose cases came under my notice.

I have before remarked, that the contagion sometimes excited a fever as soon as it was taken into the body, but that it often lay there from one to sixteen

‡ Diseases of the Army, p. 5. of the 7th London Edition.

days, before it produced the disease. How long it existed in the body after a recovery from the fever, I could not tell; for persons who recovered were in most cases exposed to the action of the contagion from external sources. The preternatural dilatation of the pupils was a certain mark of the continuance of some portion of the contagion in the system. In one person, who was attacked with the fever on the night of the 9th of October, the pupils did not contract to their natural dimensions, until the 7th of November.

Having described the effects of the contagion upon the body, I proceed now to mention the changes induced upon it by death.

Let us first take a view of it as it appeared soon after death. Some new light may perhaps be thrown upon the proximate cause of the disease, by this mode of examining the body.

My information upon this subject, was derived from the attendants upon the sick, and from the two African citizens who were employed in burying the dead, viz. Richard Allen and Absalom Jones. The coincidence of the information I received from different persons, satisfied me that all that I shall here relate is both accurate and just.

A deep yellow colour appeared in many cases within a few minutes after death. In some, the skin became purple, and in others black. I heard of one case in which the body was yellow above, and black below its middle. In some, the skin was as pale as it is in persons who die of common fevers. A placid countenance was observed in many, resembling that which occurs in an easy and healthful sleep.

Some were stiff within one hour after death. Others were not so for six hours afterwards. This sudden stiffness after death, Dr Valli informs us, occurred in persons who died of the plague in Smyrna in the year 1784 \*.

\* Experiments on Animal Electricity, p. 90.

Some grew cold soon after death, while others retained a considerable degree of heat for six hours, more especially on their backs.

A stream of tears appeared on the cheeks of a young woman, which seemed to have flowed after her death.

Some putrified in a short time after their dissolution, but others had no smell for twelve, eighteen, and twenty hours afterwards. This absence of smell occurred in those cases in which evacuations had been used without success, in the treatment of the disease.

Many discharged large quantities of black matter from the bowels, and others blood from the nose, mouth, and bowels, after death. The frequency of these discharges gave rise to the practice of pitching the joints of the coffins which were used to bury the dead.

The morbid appearances of the internal parts of the body, as they appear by dissection after death, from the yellow fever, are different in different countries, and in the same countries in different years. I consider them all as effects only of a stimulus acting upon the whole system, and determined more or less by accidental circumstances, to particular viscera. Perhaps the stimulus of the contagion determines the fluids more violently in most cases to the liver, stomach, and bowels, and thereby disposes them, more than other parts, to inflammation and mortification, and to similar effusions and eruptions with those which take place on the skin. There can be no doubt of the contagion acting specifically upon the liver, and thereby altering the qualities of the bile. I transcribe with great pleasure the following account of the state of the bile in a female slave of forty years of age, from Dr Mitchell's history of the yellow fever, as it prevailed in Virginia in the year 1737 and 1841, inasmuch as it was part of that clue

which led me to adopt one of the remedies on which much of the success of my practice depended.

"The gall-bladder (says the Doctor) appeared outwardly of a deep yellow, but within was full of a black ropy coagulated atrabilis, which sort of substance obstructed the pori biliarii, and ductus chole-dochus. This atrabilis was hardly fluid, but upon opening the gall-bladder, it retained its form and shape, without being evacuated, being of the consistence of a thin extract, and within, glutinous and ropy, like soap when boiling. This black matter seemed so much unlike bile, that I doubted if there were any bile in the gall-bladder. It more resembled bruised or mortified blood, evacuated from the mortified parts of the liver surrounding it, although it would stain a knife or probe thrust into it of a yellow colour, which, with its ropy consistence, seemed more peculiar to a biliary humour."

The same appearance of the bile was discovered in several other subjects dissected by Dr Mitchell.

The liver, in the above-mentioned slave, was turgid and plump on its outside; but, on its concave surface, two thirds of it were of a deep black colour, and round the gall-bladder it seemed to be mortified and corrupted.

The duodenum was lined on its inside, near the gall-bladder, with a viscid ropy bile, like that which has been described. Its villous coat was lined with a thick fur or slime, which, when scraped or peeled off, the other vascular and muscular coats of the gut appeared red and inflamed.

The omentum was so much wasted, that nothing but its blood-vessels could be perceived.

The stomach was inflamed both on its outside and inside. It contained a quantity of bile of the same consistence, but of a blacker colour than that which was found in the gall-bladder. Its villous coat, like that of the duodenum, was covered with fuzzy and slimy matter. It moreover appeared to be distended

or swelled. This peculiarity, in the inner coat of the stomach, was universal in all the bodies that were opened, of persons who died of this disease.

The lungs, instead of being collapsed, were inflated, as in inspiration. They were all over full of black or livid spots. On these spots were to be seen small vesicles or blisters, like those of an erysipelas or gangrene, containing a yellow humour.

The blood-vessels, in general, seemed empty of blood, even the vena cava and its branches; but the vena portarum was full and distended as usual. The blood seemed collected in the *viscera*; for, upon cutting the lungs, or found liver, or spleen, they bled freely.

The brain was not opened in this body, but it was not affected in three others whose brains were examined.

Dr Mackittrick, in his inaugural dissertation, published at Edinburgh, in the year 1766, "De febre Indiæ occidentalis, Maligna Flava," or, upon the yellow fever of the West Indies, says, that in some of the patients who died of it, he found the liver sphaeclated, the gall-bladder full of black bile, and the veins turgid with black fluid blood. In others, he found the liver no ways enlarged, and its "texture only vitiated." The stomach, the duodenum, and ileum, were remarkably inflamed in all cases. The pericardium contained a viscid yellow serum, and in a larger quantity than common. The urinary bladder was a little inflamed. The lungs were found.

Dr Hume, in describing the yellow fever of Jamaica, informs us, that in several dead bodies which he opened, he found the liver enlarged and turgid with bile, and of a pale yellow colour. In some he found the stomach and duodenum inflamed. In one case he discovered black spots in the stomach, of the size of a crown piece. To this account he adds, "that he had seen some subjects opened, on whose sto-

machs no marks of inflammation could be discovered ; and yet these had excessive vomiting."

Dr Lind has furnished us with an account of the state of the body after death, in his short history of the yellow fever, which prevailed at Cadiz in the year 1764. " The stomach, (he says) mesentery, and intestines, were covered with gangrenous spots : there were ulcers on the orifice of the stomach ; and the liver and lungs were of a putrid colour and texture \*."

To these accounts of the morbid appearances of the body after death from the yellow fever, I shall only add the account of several dissections which was given to the public in Mr Brown's Gazette, during the prevalence of our late epidemic, by Dr Physick and Dr Cathrall.

" BEING well assured of the great importance of dissections of morbid bodies in the investigation of the nature of diseases, we have thought it of consequence, that some of those, dead of the present prevailing malignant fever, should be examined ; and, without enlarging on our observations, it appears at present sufficient to state the following facts :

" 1st. That the brain, in all its parts, has been found in a natural condition.

2. That the viscera of the thorax are perfectly sound. The blood, however, in the heart and veins, is fluid, similar in its consistence to the blood of persons who have been hanged, or destroyed by electricity.

" 3d. That the stomach, and beginning of the duodenum, are the parts that appear most diseased. In two persons who died of the disease on the 5th

\* Diseases of Warm Climates, p. 125.

day, the villous membrane of the stomach, especially about its smaller end, was found highly inflamed ; and this inflammation extended through the pylorus into the duodenum some way.—The inflammation here was exactly similar to that induced in the stomach by acrid poisons, as by arsenic, which we have once had an opportunity of seeing in a person destroyed by it.

“ The bile in the gall-bladder was quite of its natural colour, though very viscid.

“ In another person who died on the 8th day of the disease, several spots of extravasation were discovered between the membranes, particularly about the smaller end of the stomach, the inflammation of which had considerably abated. Pus was seen in the beginning of the duodenum, and the villous membrane at this part was thickened.

“ In two other persons, who died at a more advanced period of the disease, the stomach appeared spotted in many places with extravasations, and the inflammation disappeared. It contained, as did also the intestines, a black liquor, which had been vomited and perged before death. This black liquor appears clearly to be an altered secretion from the liver ; for a fluid, in all respects of the same qualities, was found in the gall-bladder. This liquor was so acrid, that it induced considerable inflammation and swelling on the operator’s hands, which remained some days. The villous membrane of the intestines, in these last two bodies, was found inflamed in several places.

“ The liver was of its natural appearance, excepting in one of the last persons, on the surface of which a very few distended veins were seen : all the other abdominal viscera were of a healthy appearance.

“ The external surface of the stomach, as well as of the intestines, was quite free from inflammation ; the veins being distended with blood, which appear-

ed through the transparent peritoneum, gave them a dark colour.

"The stomach of those who died early in the disease was always contracted; but in those who died at a more advanced period of it, where extravasations appeared, it was distended with air."

P. S. PHISICK.

J. CATHRALL."

I have before remarked, that these dissections were made early in the disorder, and that Dr Annan attended a dissection of a body at Bush-hill some time afterwards, in which an unusual turgescence appeared in the vessels of the brain.

Thus far have I delivered the history of the yellow fever, as it affected the human body with sickness and death. I shall now mention a few of those circumstances of public and private distress which attended it. I have before remarked, that the first reports of the existence of this fever were treated with neglect or contempt. A strange apathy pervaded all classes of people. While I bore my share of reproach for "terrifying our citizens with imaginary danger," I answered it by lamenting "that they were not terrified enough." The publication from the college of physicians soon dissipated this indifference and incredulity. Fear or terror now sat upon every countenance. The disease appeared in many parts of the town, remote from the spot where it originated; although, in every instance, it was easily traced to it. This set the city in motion. The streets and roads leading from the city, were crowded with families, flying in every direction for safety to the country. Business began to languish. Water-street, between Market and Race-streets, became a desert. The poor were the first victims of the fever. From the sudden interruption of business, they suffered for a

while from poverty, as well as disease. A large and airy house at Bush-hill, about a mile from the city, was opened for their reception. This house, after it became the charge of a committee appointed by the citizens on the 14th of September, was regulated and governed with the order and cleanliness of an old and established hospital. An American and French physician had the exclusive medical care of it after the 22d of September.

The contagion, after the second week in September, spared no rank of citizens. Whole families were confined by it. There was a deficiency of nurses for the sick, and many of those who were employed, were unqualified for their business. There was likewise a great deficiency of physicians, from the desertion of some, and the sickness and death of others. At one time, there were only three physicians who were able to do business out of their houses, and at this time, there were probably not less than 6,000 persons ill with the fever.

During the first three or four weeks of the prevalence of the disorder, I seldom went into a house the first time, without meeting the parents or children of the sick in tears. Many wept aloud in my entry, or parlour, who came to ask for advice for their relations. Grief, after awhile, descended below weeping; and I was much struck in observing, that many persons submitted to the loss of relations and friends, without shedding a tear, or manifesting any other of the common signs of grief.

A cheerful countenance was scarcely to be seen in the city for six weeks. I recollect once, in entering the house of a poor man, to have met a child of two years old that smiled in my face. I was strangely affected with this sight, (so discordant to my feelings and the state of the city) before I recollected the age and ignorance of the child. I was confined the next day by an attack of the fever, and was sorry to hear, upon my recovery, that the father and mother

of this little creature died, a few days after my last visit to them.

The streets every where discovered marks of the distress that pervaded the city. More than one half the houses were shut up, although not more than one third of the inhabitants had fled into the country. In walking for many hundred yards, few persons were met, except such as were in quest of a physician, a nurse, a bleeder, or the men who buried the dead. The hearse alone kept up the remembrance of the noise of carriages or carts in the streets. Funeral processions were laid aside. A black man, leading or driving a horse, with a corpse on a pair of chair wheels, with now and then half a dozen relations or friends following at a distance from it, met the eye in most of the streets of the city, at every hour of the day, while the noise of the same wheels, passing slowly along the pavements, kept alive anguish and fear in the sick and well, every hour of the night \*.

But a more serious source of the distress of the city arose from the dissentions of the physicians, about the nature and treatment of the fever. It was considered by some, as a modification of the influenza, and by others as the Jail fever. Its va-

\* In the life of Thomas Story, a celebrated preacher among the Friends, there is an account of the distress of the city in its infant state, from the prevalence of the yellow fever, in the autumn of 1699, nearly like that which has been described. I shall insert the account in his own words. "Great was the fear that fell on all flesh. I saw no lofty or airy countenance, nor heard any vain jesting to move men to laughter. Every face gathered paleness, and many hearts were humbled, and countenances fallen and sunk, as such that waited every moment to be summoned to the bar, and numbered to the grave." The same author adds, that six, seven, and sometimes eight, died of this fever in a day, for several weeks. His fellow traveller and companion in the ministry, Roger Gill, discovered upon this occasion an extraordinary degree of Christian philanthropy. He publicly offered himself, in one of the meetings of the Society, as a sacrifice for the people, and prayed that "God would please to accept of his life for them, that a stop might be put to the contagion." He died of the fever a few days afterwards.

rious grades and symptoms, were considered as so many different diseases, all originating from different causes. There was the same contrariety in the practice of the physicians that there was in their principles. The newspapers conveyed accounts of both to the public, every day. The minds of the citizens were distracted by them, and hundreds suffered and died from the delays which were produced by an erroneous opinion of a plurality of diseases in the city, or by indecision in the choice, or a want of confidence in the remedies of their physician.

The science of medicine is related to every thing; and the philosopher, as well as the Christian, will be gratified by knowing the effects of a great and mortal epidemic, upon the morals of a people. It was some alleviation of the distress produced by it, to observe its influence upon the obligations of morality and religion. It was remarked during this time, by many people, that the name of the Supreme Being was seldom profaned, either in the streets, or in the intercourse of the citizens with each other. Two robberies only, and these of a trifling nature, occurred in nearly two months, although many hundred houses were exposed to plunder, every hour of the day and night. Many of the religious societies met two or three times a week, and some of them every evening, to implore the interposition of heaven to save the city from desolation. Humanity and charity kept pace with devotion. The public have already seen accounts of their benevolent exercises, in other publications. It was my lot to witness the uncommon activity of those virtues upon a smaller scale. I saw little to blame, but much to admire and praise, in persons of different professions, both sexes, and of all colours. It would be foreign to the design of this work, to draw from the obscurity which they fought, the many acts of humanity and charity, of fortitude, patience, and perseverance, which came under my notice. They will be made public, and applauded elsewhere.

But the virtues which were excited by our calamity, were not confined to the city of Philadelphia. The United States wept for the distresses of their capital. In several of the States, and in many cities and villages, days of humiliation and prayer were set apart to supplicate the Father of mercies in behalf of our afflicted city. Nor was this all. From nearly every State in the Union, the most liberal contributions of money, provisions, and fuel, were poured in for the relief and support of such as had been reduced to want, by the suspension of business, as well as by sickness, and the death of friends.

The number of deaths, between the first of August and the ninth of November, amounted to four thousand and forty-four. I shall here insert a register of the number which occurred on each day, beginning on the first of August, and ending on the ninth of November. By comparing it with the register of the weather, it will shew the influence of the latter on the disease. Several of the deaths in August were from other acute disorders, and a few in the succeeding months were from such as were of a chronic nature.

## AN ACCOUNT OF THE

August.	Died.	Brought forward,	Died.
1	9		325
2	8	1	17
3	9		18
4	10		11
5	10		23
6	3		20
7	12		24
8	5		18
9	11		42
10	6		32
11	7		29
12	5		23
13	11		33
14	4		37
15	9		48
16	7		56
17	6		67
18	5		81
19	9		68
20	7		61
21	8		67
22	13		57
23	10		76
24	17		68
25	12		96
26	17		87
27	12		52
28	22		60
29	24		51
30	20		57
31	17		63
	325		1768

	Died.		Died.
Brought forward,	1768	Brought forward,	3318
October 1	74	October 21	59
2	66	22	82
3	78	23	54
27 Scpt 1840	58	24	38
5	71	25	35
16	76	26	23
note of all thd	82	27	13
8	90	28	24
102		29	17
since the 1 <sup>st</sup> day	93	30	16
of April till	119	31	21
12	111	Novembr	
13	104	1	13
14	81	2	21
15	80	3	15
16	70	4	15
17	80	5	14
18	59	6	11
19	65	7	15
20	55	8	8
in town 140 cases	3318	9	6
die 13		Total,	3881*

*I. Franks*  
From this table it appears, that the principal mortality was in the second week of October. A general expectation had obtained, that cold weather was as fatal to the contagion of this fever as heavy rains. The usual time for its arrival had come, but the weather was still not only moderate, but warm. In this awful situation, the stoutest hearts began to fail. Hope sickened, and despair succeeded distress in almost every countenance. On the fifteenth of October it pleased God to alter the state of

\* In the above accounts, there is a deficiency of returns from several grave-yards, of 163.

the air. The clouds at last dropped health in showers of rain, which continued during the whole day, and which were succeeded for several nights afterwards by cold and frost. The effects of this change in the weather, appeared first in the sudden diminution of the sick; for the deaths continued for a week afterwards to be numerous, but they were of persons who had been confined before, or on the day in which the change had taken place in the weather.

The appearance of this rain was like a dove with an olive branch in its mouth, to the whole city. Public notice was given of its beneficial effects in a letter subscribed by the mayor of Philadelphia, who acted as president of the committee, to the mayor of New York. I shall insert the whole of this letter. It contains, besides the above information, a record of the liberality of that city to the distressed inhabitants of Philadelphia.

“ SIR,—I am favoured with your letter of the 12th instant, which I have communicated to the Committee for the relief of the poor and afflicted of this city.

“ It is with peculiar satisfaction that I execute their request, by making in their name, on behalf of our suffering fellow-citizens, the most grateful acknowledgements for the reasonable benevolence of the Common Council of the city of New York. Their sympathy is balm to our wounds.

“ We acknowledge the divine interposition, whereby the hearts of so many around us have been touched with our distress, and have united in our relief.

“ May the Almighty Disposer of all events be graciously pleased to protect your citizens from the dreadful calamity with which we are now visited; whilst we humbly kiss the rod, and improve by the dispensation.

“ The part, sir, which you personally take in our afflictions, and which you have so pathetically ex-

pressed in your letter, excites in the breasts of the Committee the warmest sensations of fraternal affection.

"The refreshing rain which fell the day before yesterday, though light, and the cool weather which hath succeeded, appear to have given a check to the prevalence of the disorder; of this we have satisfactory proofs; as well in the decrease of the funerals, as in the applications for removal to the hospital.

"I have at your request this day drawn upon you, at sight, in favour of the President and Directors of the Bank of North America, for the sum of five thousand dollars, the benevolent donations of the Common-Council of the city of New York.

"With sentiments of the greatest esteem and regard,

I am, Sir,

*Philadelphia, 7 Oct. 1793.*

MATTH. CLARKSON."

*Richard Varick, Mayor of  
the city of New York.*

It is no new thing for bilious fevers of every description, to be checked or subdued by wet and cold weather.

The yellow fever, which raged in Philadelphia in 1699, and which is taken notice of by Thomas Story in his Journal, ceased about the latter end of October, or the beginning of November. Of this there are satisfactory proofs in the register of the interments in the Friends burying-ground, and in a letter dated November 9th, Old Style, 1699, from Isaac Norris to one of his correspondents, which his grandson Mr Joseph P. Norris, politely put into my hands, with several others, which mention the disease, and all written in that memorable year in Philadelphia. The letter says, "It has pleased God to put a stop to our

sore visitation, and town and country are now generally healthy." The same disease was checked by wet and cold weather in the year 1741. Of this there is a proof in a letter from Dr Franklin to one of his brothers, who stopped at Burlington, on his way from Boston to Philadelphia, on account of the fever, until he was assured by the Doctor, that a thunder gust which had cooled the air, had rendered it safe for him to come into the city \*. Mr Lyndford Lardner, in a letter to one of his English friends, dated September 24. 1747, Old Style, after mentioning the prevalence of the fever in the city, says, "the weather is now much cooler, and those under the disorder revive. The symptoms are less violent, and the fever gradually abates."

I have in vain attempted to procure an account of the time of the commencement of cold weather, in the autumn of 1762. In the short history of the fever of that year, which I have inserted from my note book, I have said that it continued to prevail in the months of November and December. The register of the interments in the Friends burying-ground in those months, confirms that account. They were nearly as numerous in November and December, as in September and October. Viz. in September 22, in October 27, in November 19, and in December 26.

The bilious remitting fever of 1780 yielded to cool weather, accompanied by rain, and an easterly wind †.

\* From a short note in the register of the interments in the Friend's burying-ground, it appears, that the fever this year made its first appearance in the month of June. The following is a copy of that note. " 12th of the 6th month (O. S.) 1741, a malignant yellow fever now spreads much." Besides that note, there is the following : " 25th of the 7th month (O. S.) 1741, many who died of the above distemper were persons lively, and strong, and in the prime of their time.

† Medical Inquiries and Observations, London Edition, p. 106,

Sir John Pringle will furnish ample satisfaction, to such of my readers as wish for more proofs of the efficacy of heavy rains, and cold weather, in checking the progress and violence of autumnal remitting fevers \*.

From the 15th of October, the disease not only declined, but assumed more obvious inflammatory symptoms. It was, as in the beginning, more necessarily fatal where left to itself, but it yielded more certainly to art, than it did a few weeks before. The duration of it was now more tedious, than in the warmer weather.

There were a few cases of yellow fever in November and December, after the citizens, who had retired to the country, returned to the city.

I heard of only three persons who returned to the city being infected with the disorder; so completely was the contagion destroyed in the course of a few weeks.

In consequence of a proclamation by the Governor, and a recommendation by the Clergy of Philadelphia, the 12th of December was observed as a day of thanksgiving throughout the state, for the extinction of the disorder in the city.

It was easy to distinguish, in walking the streets, the persons who had returned from the country to the city, from those who had remained in it during the prevalence of the fever. The former appeared ruddy, and healthy, while the latter appeared of a pale or fallow colour.

It afforded a subject of equal surprise and joy to behold the suddenness with which the city recovered its former habits of business. In the course of six weeks after the disease had ceased, nothing but fresh graves, and the black dresses of many of the citizens, afforded a public trace of the distresses which had so lately prevailed in the city.

\* P. 5, 56, 180, and 323.

The month of November, and all the winter months which followed the autumnal epidemic, were in general healthy. A catarrh affected a number of people in November. I suspected it to be the influenza which had revived from a dormant state; and which had not spent itself when it yielded to the predominance of the yellow fever. This opinion derives some support from a curious fact related by the late Mr Hunter, of the revival of the small-pox in a patient, in whom it had been suspended for some time by the measles\*. The few fevers which prevailed in the winter were highly inflammatory. The small-pox in the natural way was in several instances confluent; and in one or two fatal. I was prepared to expect this inflammatory diathesis in the fevers of the winter; for I had been taught by Dr Sydenham, that the diseases which follow a great and mortal epidemic, partake more or less of its general character. But the diseases of the winter had a peculiarity still more extraordinary; and that was, many of them had several of the symptoms of the yellow fever, particularly a puking of bile, dark-coloured stools, and a yellow eye. Mr Samuel D. Alexander, a student of medicine from South Carolina, who was seized with a pneumonia about Christmas, had, with a yellow eye, a dilated pupil, and a hard pulse which beat only 50 strokes in a minute. His blood was such as I had frequently observed in the yellow fever. Dr Griffitts informed me, that he attended a patient on the 9th of January in pneumonia, who had an universal yellowness on his skin. I met with a case of pneumonia on the 20th of the same month, in which I observed the same degrees of redness in the eyes that were common in the yellow fever. My pupil, Mr Coxe, lost blood in an inflammatory fever, on the 18th of

\* Introduction to a Treatise on the Venereal Disease, p. 3, of the American edition.

February, which was dissolved. Mr James Innis, the brewer, had a deep yellow colour in his eyes, on the fourth day of a pneumony, on the 27th of the same month; and Mr Magnus Miller had the same symptom of a similar disorder, on the 16th of March. None of these bilious and anomalous symptoms of the inflammatory fevers of the winter and spring surprised me. I had been early taught by Dr Sydenham, that the epidemics of autumn often insinuate some of their symptoms into the winter diseases which follow them. Dr Cleghorn informs us, that "the pleurisies which succeeded the autumnal tertians in Minorca, were accompanied by a vomiting and purging of green or yellow bilious matters.\*

It belongs to powerful epidemics to be followed by some diseases after they disappear, as well as to run into others at their first appearance. In the former case it is occasioned by a peculiar state of the body, created by the epidemic constitution of the air not having been changed by the weather which succeeded it.

The weather in March resembled that of May; while the weather in April resembled that of March in common years. A rash prevailed in many families in April, accompanied in a few cases by a sore throat. It was attended with an itching, a redness of the eyes, and a slight fever, in a few instances. The small-pox by inoculation in this month was more mortal than in former years. However unimportant these facts may appear at this time, future observations may perhaps connect them with a similar constitution of the air which produced our late autumnal epidemic.

The appearance of bilious symptoms in the diseases of the winter, excited apprehensions in several instances of the revival of the yellow fever. The alarms, though false, served to produce vigilance and

\* Page 273.

industry in the corporation, in airing and purifying such houses and articles of furniture as belonged to the poor ; and which had been neglected in the autumn, after the ceasing of the disease.

The modes of purifying houses, beds, and clothes, were various. Fumigations of nitre and aromatic substances were used by some people. Burying infected articles of furniture under ground, and baking them in ovens, were used by others. Some destroyed all their beds and clothing that had been infected, or threw them into the Delaware. Many whitewashed their walls, and painted the wood-work of their house. I did not conceive the contagion required all, or any of those means to destroy it. I believed *cold* and *water* to be sufficient for that purpose. I therefore advised keeping the windows of infected rooms open night and day, for a few days ; to have the floors and walls of houses well washed ; and to expose beds, and such articles of household furniture as might be injured by washing, upon the bare earth for a week or two, taking care to turn them every day. I used no other methods of destroying the accumulated contagion in my house and furniture, and experience showed that they were sufficient. Those branches of my family who had been absent during the prevalence of the fever (amounting to eleven in number) returned to the city on the 22d of November, and occupied the house and beds which had been highly infected, without suffering a moment's indisposition from it. The weather of the winter favoured the complete destruction of the contagion. It was alternately moderate and cold ; by which means the contagion, if accidentally revived by the former, was more effectually destroyed by the latter state of the air.

It is possible a portion of the contagion may exist in clothes or bedding, under such circumstances of warmth, as to be excited into action in the course of the approaching summer and autumn ; but it cannot

spread without a corresponding constitution of the atmosphere. A trunk full of infected clothes, the property of Mr James Bingham, who died of the yellow fever in one of the West India islands about 40 years ago, was opened some months after they were received by his friends, by a young man who lived in his brother's family. This young man took the disease, and died ; but without infecting any of the family : nor did the disease spread afterwards in the city.

The father of Mr Joseph Paschall was infected with the yellow fever of 1741, by the smell of a bed in passing through Norris's Alley, in the latter end of December, after the disease had left the city. He died on the 25th of the month, but without reviving the fever in the city, or even infecting his family.

In a letter from Dr Senter of Newport, dated January 7th, 1794, I find the following fact, which I shall communicate in his own words. It is introduced to support the principle, that the yellow fever cannot spread in any country without the concurrence of a predisposing constitution of air. " This place (says the Doctor) has traded formerly very much to the West India islands, and more or less of our people have died there every season, when the disease prevails in those parts. Clothes of these unfortunate people have been repeatedly brought home to their friends, without any accident happening to them."

It is not peculiar to the contagion of the yellow fever to require the concurrence of a morbid constitution of the air to excite it into action. The contagion of the plague perished twice in the city of Lar-nica, without spreading, from the absence of that necessary state of the air, in the year 1759 \*.

Several persons it is said died of the yellow fever in the summer and autumn of 1763, the year after

\* P. Russel, p. 4.

it had been epidemic in our city. I witnessed the symptoms which immediately preceded the death of one of them. Whether the disease in this sporadic case was produced by a revival of the contagion, or by miasmata generated in the city, I am unable to determine.

Dr Mitchell informs us, that the disease appeared in Virginia in the spring of 1742, after the autumn of 1741. In this case the contagion was probably kept alive during the winter by the want of cleanliness in the negro-quarters; and perhaps by moderate weather.

These are the only facts which support the fears of the return of the disease to our city, in the course of the present year. To aid our hopes, that this will not be the case, I have great pleasure in adding, that it has never prevailed in successive years either in this city or in Charleston; in one of which there are records of its having been five, and in the other four times epidemic.

I feel with my reader the fatigue of this long detail of facts, and equal impatience with him, to proceed to the history of the treatment of the fever; but I must beg leave to detain him a little longer from that part of the work, while I resume the subject of the origin of the fever. It is an interesting question, as it involves in it the means of preventing a return of the disorder.

Soon after the fever left the city, the governor of the state addressed a letter to the College of Physicians, requesting to know their opinion of its origin; if imported; from what place; at what time; and in what manner. The design of this inquiry was to procure such information as was proper to lay before the Legislature, in order to improve the laws for preventing the importation or generation of infectious diseases, or to enact new ones, if necessary, for that purpose. To the governor's letter, the College of Physicians sent the following answer:

" SIR,—It has not been from a want of respect to yourself, nor from inattention to the subject, that your letter of the 30th ult. was not sooner answered; but the importance of the questions proposed, has made it necessary for us to devote a considerable portion of time and attention to the subject, in order to arrive at a safe and just conclusion.

" No instance has ever occurred of the disease called the *yellow fever* having been generated in this city, or in any other parts of the United States, as far as we know; but there have been frequent instances of its having been imported, not only into this, but into other parts of North America, and prevailing there for a certain period of time; and from the rise, progress, and nature of the malignant fever, which began to prevail here about the beginning of last August, and extended itself gradually over a great part of the city, we are of opinion, that this disease was imported into Philadelphia by some of the vessels which arrived in the port after the middle of July. This opinion we are further confirmed in by various accounts we have received from unquestionable authorities.

(Signed by order of the College of Physicians)

November 26<sup>th</sup>, }  
1793. } JOHN REDMAM, PRESIDENT.

To the Governor of Pennsylvania.

Three members of the College dissented from the report contained in this letter. They were Dr Redman, the President of the College, Dr Foulke, and Dr Leib.

I am sorry to meet my brethren, upon every question of our late epidemic, in a field of controversy. In the present, they will have a great advantage over me; for the prejudices of the citizens of Philadelphia are in their favour. Loathsome and dangerous diseases have been considered by all nations as of so-

reign extraction. The venereal disease and the leprosy have no native country, if we believe all the authors who have written upon their origin. Prosper Alpinus, derives the almost yearly plagues of Cairo from Syria; and Dr Warren flattered the people of Barbadoes, by an attempt to persuade them, that the yellow fever of the West Indies was originally imported from Siam. This principle of referring the origin of the evils of life, from ourselves to others, is universal. It discovered itself in paradise, and it is, every were, an essential feature in the character of man.

### Malaria

I have asserted, in the introduction to the history of this fever, that I believed it to have been generated in our city: I shall now deliver my reasons for that belief.

1. The yellow fever in the West Indies, and in all other countries where it is endemic, is the offspring of vegetable putrefaction. Heat, exercise, and intemperance in drinking, (says Dr Lind) dispose to this fever in hot climates, but they do not produce it, without the concurrence of a remote cause. This remote cause exists at all times, in some spots of the Islands, but in other parts of even the same Islands, where there are no marsh exhalations, the disease is unknown. I shall not waste a moment in enquiring into the truth of Dr Warren's account of the origin of this fever. It is fully refuted by Dr Hillary, and it is treated as chimerical by Dr Lind. They have very limited ideas of the history of this fever, who suppose it to be peculiar to the East or West Indies. It was generated in Cadiz, after a hot and dry summer in 1764; and in Pensacola, in 1765\*. The tertian fever of Minorca, when it attacked Englishmen, put on the usual symptoms of the yellow fever†. In short, this disease appears, according to

\* Lind on the Diseases of Hot Climates, p. 36, and 124.

† Cleghorn, page 176.

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Dr Lind, in all the southern parts of Europe, after hot and dry weather \*.

2. The same causes (under like circumstances) must always produce the same effects. There is nothing in the air of the West Indies above other hot countries, which disposes it to produce a yellow fever. Similar degrees of heat, acting upon dead and moist vegetable matters, are capable of producing it, together with all its various modifications, in every part of the world. In support of this opinion, I shall transcribe part of a letter from Dr Miller, of the Delaware state.

"Dover, Nov. 5. 1793.

"DEAR SIR,—Since the middle of last July, we have had a Bilious Colic epidemic in this neighbourhood, which exhibits phenomena very singular in this climate; and, so far as I am informed, unprecedented in the medical records, or popular traditions of this country. To avoid unnecessary details, it will suffice at present to observe, that the disease, on this occasion, has not only assumed all the essential characters, but likewise all the violence, obstinacy, and malignity, described by the East and West Indian practitioners. If any difference can be observed, it seems here to manifest higher degrees of stubbornness and malignity, than we usually meet in the histories of tropical writers. In the course of the disease, not only extreme constipation, frequent vomiting, and the most excruciating pains of the bowels and limbs, harasses the unhappy patients; but to these succeed paralysis, convulsions, &c. and almost always uncommon muscular debility,—oppression of the praecordia, &c. are the consequences of a severe attack. Bile, discharged in enormous quantities, constantly assumes the most corrupted and acrimoni-

\* Diseases of Hot Climates, page 123.

ous appearances, commonly æruginous in a very high degree, and sometimes quite atrabilious.

" The inference I mean to draw from the phenomena of this disease, as it appears in this neighbourhood, and which I presume will also apply to your epidemic, is THIS, that from the uncommon protraction and intenseness of our summer and autumnal heats, but principally from the unusual droughts we have had since the middle of July, a near approach to a TROPICAL season, and that of consequence we ought not to be surprised if tropical diseases, even of the most malignant nature, are EN-GENDERED amongst us."

To the above information it may be added, that the dysentery, which prevailed during the late autumn in several of the villages of Pennsylvania, was attended with a malignity and mortality, unknown before in any part of the state. I need not pause to remark that this dysentery arose from putrid exhalation, and that it is, like the bilious colic, only a modification of one original genus of bilious feyer.

But further, a malignant fever, resembling that which was epidemic in our city, prevailed during the autumn in many parts of the United States, viz. at Lyna in Massachusetts, at Weatherfield and Coventry in Connecticut, at New Galloway in the state of New York, on Walkill and on Pensoken creeks in New Jersey, at Harrisburgh, and Hummelston in Pennsylvania, in Caroline county in Maryland, on the South branch of the Potowmac in Hardie county, also in Lynchburgh and in Alexandria in Virginia, and in several counties in North Carolina. In none of these places was there a suspicion of the disease being imported from abroad, or conveyed by an intercourse with the city of Philadelphia.

It is no objection to the inference which follows from these facts, that the common remitting fever was not known during the above period in the neighbourhood of this city, and in many other parts of

the state, where it had usually appeared in the autumnal months. There is a certain combination of moisture with heat, which is essential to the production or the remote cause of a bilious fever. Where the heat is so intense, or of such long duration as wholly to dissipate moisture, or when the rains are so great as totally to overflow the marshy ground, or to wash away putrid masses of matter, no fever can be produced.

Dr Dazilles, in his treatise upon the diseases of the Negroes in the West Indies, informs us, that the RAINY season is the most healthy at Cayenne, owing to the neighbouring morasses being DEEPLY overflowed—whereas at St Domingo, a DRY season is most productive of diseases; owing to its favouring those degrees of moisture which produce morbid exhalations. These facts will explain the reason why, in certain seasons, places which are naturally healthy in our country, become sickly, while those places, which are naturally sickly, escape the prevailing epidemic. Previously to the dissipation of the moisture from the putrid masses of vegetable matters in our streets, and in the neighbourhood of the city, there were (as several practitioners can testify) many cases of mild remittents, but they all disappeared about the first week in September.

It is worthy of notice, that the yellow fever prevailed in Virginia in the year 1741, and in Charleston in South Carolina in the year 1699, in both which years it prevailed in Philadelphia. Its prevalence in Charleston is taken notice of in a letter dated November 18th, O. S. 1699, from Isaac Norris to one of his correspondents. The letter says, that “150 persons had died in Charleston in a few days,” that “the survivors fled into the country,” and that “the town was thinned to a very few people.” Is it not probable, from the prevalence of this fever twice in two places in the same years, that it was produced (as last year) by a general constitution of air, co-operating with miasmata, which favoured its

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generation in different parts of the continent? But again, such was the state of the air in the summer of 1793, that it predisposed other animals to diseases, besides the human species. In some parts of New Jersey, a disorder prevailed with great mortality among the horses, and in Virginia among the cows, during the last autumn. The urine in both was yellow.—Large abscesses appeared in different parts of the body in the latter animals, which, when opened, discharged a yellow serous fluid. From the colour of these discharges, and of the urine, the disease got the name of the *yellow water*.

3. I have before remarked that a quantity of damaged coffee was exposed at a time (July the 24th) and in a situation (on a wharf, and in a deck) which favoured its putrefaction and exhalation. Its smell was highly putrid and offensive, insomuch that the inhabitants of the houses in Water and Front Streets, who were near it, were obliged in the hottest weather to exclude it, by shutting their doors and windows. Even persons, who only walked along those streets, complained of an intolerable foetor, which, upon enquiring, was constantly traced to the putrid coffee. It should not surprise us, that this seed, so inoffensive in its natural state, should produce, after its putrefaction, a violent fever. The records of medicine furnish instances of similar fevers being produced, by the putrefaction of many other vegetable substances. Fourteen men out of sixteen perished by a malignant fever, a few years ago, at the island of Tortola, from the effluvia generated by some putrefied potatoes, which were taken out of the hold of a Liverpool vessel. "The effluvia (says Dr Zimmerman) from a little heap of flax, has been known to occasion a malignant fever, which proved fatal to the family in which it first began, and afterwards spread its contagion through a whole country." Dr Rodgers, in his treatise upon the diseases of Cork, mentions a

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malignant fever which swept away a great number of the students of Wadham College in Oxford, "The singularity of the case (adds the Doctor) engaged all the gentlemen of the faculty in a serious inquiry into the causes of so remarkable an effect, and all agreed that the *contagious* infection arose from the putrefaction of a vast quantity of cabbages thrown into a heap out of the several gardens near the College." Lancissi relates, that one end of the city of Rome was nearly desolated by the effluvia of some rotted hemp, which lay in the neighbourhood of the city. The same author remarks, that "fevers often prevail at Constantinople, which owe their origin to the hemp which is brought from Cairo, and which is put wet into the public granaries, and suffered to ferment during the summer. It is afterwards sold, and the seeds of those diseases are afterwards spread among the people." Many other facts might be adduced of radishes, turnips, garlic, and sundry other vegetables, generating by putrefaction, fevers, similar to those which have been mentioned.

## *Where helped by*

4. The rapid progres<sup>s</sup> of the fever from Water-street, and the courses through which it travelled into other parts of the city, afford a strong evidence that it was at first propagated chiefly by exhalation from the putrid coffee. It is remarkable that it passed first through those alleys and streets which were in the course of the winds that blew across the dock and wharf where the coffee lay, and that persons were affected at a much greater distance from Water-street by that means, than was afterwards known by means of the contagion which was generated by infected persons.

5. Many persons who had worked, or even visited in the neighbourhood of the exhalation from the coffee, early in the month of August, were indisposed afterwards with sickness, puking, and yellow sweats,

long before the air of Water-street was so much impregnated with the contagion, as to produce such effects ; and several patients, whom I attended in the yellow fever, declared to me, or to their friends, that their indispositions began exactly at the time they inhaled the offensive effluvia of the coffee.

6. The first cases of the yellow fever have been clearly traced to the sailors of the vessel who were first exposed to the effluvia of the coffee. Their sickness commenced with the day on which the coffee began to emit its putrid smell. The disease spread with the increase of the poisonous exhalation. A journeyman of Mr Peter Brown's, who worked near the corner of Race and Water-streets, caught the disease on the 27th of July. Elizabeth Hill, the wife of a fisherman, was infected by only sailing near the pestilential wharf, about the first of August, and died at Kensington on the 14th of the same month. Many other names might be mentioned of persons, who sickened during the last week in July, or the first week in August, who ascribed their illnesses to the smell of the coffee. From three of those persons who came under my notice, the disease was evidently propagated by contagion : from one of them, to nearly a whole family, and from another to a girl of eight years old, who was led by curiosity to examine the yellow colour which it was said had appeared in the face of the infected person, after death.

7. It has been remarked that this fever did not spread in the country, when carried there by persons who were infected, and who afterwards died with it. This I conceive was occasioned, in part, by the contagion being deprived of the aid of miasmata from the putrid matter which first produced it in our city; and in part, by its being diluted, and thereby weakened by the pure air of the country. During four times in which it prevailed in Charleston, in no one

instance, according to Dr Lining, was it propagated in any other part of the state.

8. It is very remarkable that in the histories of the disorder which have been preserved in this country, it has six times appeared about the first or middle of August, and declined, or ceased about the middle of October—viz. in 1732, 1739, 1745, and 1748 in Charleston; in 1791 in New York, and in 1793 in Philadelphia. This frequent occurrence of the yellow fever, at the usual period of our common bilious remittents, cannot be ascribed to accidental coincidence, but must be resolved in most cases into the combination of more active miasmata with the predisposition of a tropical season. In speaking of a tropical season, I include that kind of weather in which rains and heats are alternated with each other, as well as that which is uniformly warm.

9. Several circumstances attended the late epidemic, which do not occur in the West-India yellow fever. It affected children as well as adults in common with our annual bilious fevers. In the West Indies Dr Hume tells us it never attacked any person under puberty. It had, moreover, many peculiar symptoms (as I have already shewn) which are not to be met with in any of the histories of the West-India yellow fever.

10. Why should it surprise us to see a yellow fever generated amongst us? It is only a higher grade of a fever which prevails every year in our city, from vegetable putrefaction. It conforms, in the difference of its degrees of violence and danger, to season as well as climate; and in this respect it is upon a footing with the small-pox, the measles, the sore-throat, and several other diseases. There are few years past, in which a plethoric habit, and more active but limited miasmata, do not produce Sporadic Cases of

true yellow fever in Philadelphia. It is very common in South and North Carolina and in Virginia, and there are facts which prove that not only strangers, but native individuals, and in one instance, a whole family, have been carried off by it in the state of Maryland. It proved fatal to one hundred persons in the city of New York in the year 1791, where it was evidently generated by putrid exhalation. The yellow colour of the skin has unfortunately too often been considered as the characteristic mark of this fever, otherwise many other instances of its prevalence might be discovered, I have no doubt, in every part of the United States. I wish with Dr Moseley, the term *yellow*, could be abolished from the titles of this fever; for this colour is not only frequently absent, but sometimes occurs in the mildest bilious remittents. Dr Haller, in his pathology, describes an epidemic of this kind in Switzerland, in which this colour generally attended, and I have once seen it almost universal in a common bilious fever which prevailed in the American army in the year 1776.

If any thing could surprise me, after reading the report of the College of Physicians that our late fever was imported, in spite of every possible evidence to the contrary, it would be the opinion which was delivered publicly by some leading members of the college, that no fever produced by vegetable putrefaction and exhalation, had ever been contagious. It is scarcely possible to open a practical book upon medicine, without meeting with facts which establish a contrary opinion. The fevers generated by putrid cabbage, mentioned by Dr Rodgers, and by putrid flax, mentioned by Dr Zimmerman, were both contagious. Dr Lind ascribes the yellow fever every where to marsh or putrid vegetable exhalations; and this fever, we know, spreads by contagion. Dr Lind, jun. establishes the contagious nature of the marsh fever which prevailed in Bengal in the year 1762. I

shall transcribe his words upon this subject. " Although marsh miasmata (says he) first bring on the disease, yet contagion presently spreads it, and renders it more epidemic. Thus the Drake Indianaman continued free from the disorder for two weeks together, when she had no communication with other ships; whereas, as soon as the disorder was brought on board, many were seized with it within a few days in such a manner as to leave no room to entertain the least doubt concerning its pestilential nature \*."

Dr Clark mentions a contagious malignant fever from marsh miasmata, which prevailed at Prince's Island in the year 1771, and which afterwards infected the crew of the Grenville Indianaman †. The contagious pestilential fever in France, so accurately described by Riverius, was produced by an exhalation from putrid vegetables, particularly hemp and flax ‡. Even intermittents, the most frequent and the most numerous offspring of marsh exhalation, are contagious. Of this there are many proofs in practical authors. Bianchi describes an intermittent which was highly contagious at Wolfenbottel in the year 1666 §. Dr Clark mentions a number of cases in which this mild species of fever was propagated by contagion. Dr Cleghorn has established the contagious nature of intermittents by many facts. After mentioning numerous instances of their having spread in this way, he says, " These tertians have as good a right to be called contagious as the measles, small-pox, or any other diseases ||." The United States, in common with other countries, have in many places exhibited proofs of the contagious na-

\* Page 35. 36.

† Observations on the Diseases of Long Voyages to hot countries, vol. i. p. 123. 124.

‡ De Febre Pestilenti, vol. ii. p. 97.

§ Histor. Hepat. p. 745.

|| Page 132.

ture of fevers, produced by putrid vegetable exhalations. The yellow fever which the citizens of New York wisely admit to have been generated in their city from vegetable putrefaction in the year 1791, spread by contagion\*. The bilious fever which prevailed in Philadelphia in the year 1778, was evidently contagious; so were the bilious fevers which prevailed during the last autumn in Weathersfield, Harrisburgh, and on the south branch of the Potowmac. I hope I shall be excused by the physicians of other states (if this publication should fall into their hands) for having employed a single page in combating an error which is so obvious to common observation. My only design in exposing it, is to prevent a repetition of its fatal influence in the only city in the world in which it has ever been believed or propagated.

I am far, however, from denying that this disease has not sometimes been imported into our country. From the authority of Dr Lind, it appears that this has once been the case in Philadelphia. In this respect it is upon a footing with the plague, which is both an imported and a generated disease in the cities of the East. I am disposed, however, to believe, that the instances of the yellow fever being imported are very few, compared with those of its being generated in our country. What makes this opinion probable, is, that neither Great Britain nor Ireland have ever, to my knowledge, been infected by this fever, notwithstanding their long and frequent commercial intercourse with the West India Islands. The summers, in each of those countries, though seldom hot enough to generate a contagious yellow or bilious fever, are, notwithstanding, warm enough to favour the propagation of an imported contagion of that dis-

\* Addom's Inaugural Dissertation on the Malignant Fever which prevailed in New York, during the months of August, September, and October, in 1791, p. 7.

order. The jail fever, which has more than once been introduced into our city in crowded ships from Holland, I suspect, has been sometimes mistaken for the yellow fever of the West Indies. But I have another reason for discrediting some of the accounts of the importation of this fever, which have been handed down to us by former generations; and that is, the manner in which the College of Physicians decided upon the question of the origin of the disease now under consideration. The governor of the state requested, in his letter to them, to know whether it was imported; if it were, from what *place*, at *what time*, and in *what manner*. The report of the College of Physicians takes no notice of either of those questions. It vain did Dr Foulke call upon the college to be more definite in their answer to the governor's letter. They had faithfully sought for the information required, but to no purpose. The character of their departed brother, Dr Hutchinson, for capacity and vigilance in his office, as inspector of sickly vessels, was urged without effect, as an argument against the probability of the disease being imported. Public report had derived it from several different islands; had chased it from ship to ship, and from shore to shore; and, finally, conveyed it, at different times, into the city, alternately by dead and living bodies; and, from these tales, all of which, when investigated, were proved to be without foundation, the College of Physicians composed their letter. It would seem, from this conduct of the College, as if medical superstition had changed its names, and that, in accounting for the origin of pestilential fevers, celestial, planetary, and demoniacal influence, had only yielded to the term—*importation*.

Let not the reader reject the opinion I have delivered, because it is opposed by so great a majority of the physicians of Philadelphia. A single physician supported an opinion of the existence of the plague at Messina, in the year 1743, in opposition to all the

physicians (33 in number) of that city. They denied the disease in question to exist, because it was not accompanied by glandular swellings. Time shewed that they were all mistaken, and the plague, which might probably have been checked at its first appearance, by their united efforts, was, by means of their ignorance, introduced with great mortality into every part of the city. This disposition of physicians to limit the symptoms of several other diseases, cannot be sufficiently lamented. The frequent absence of a yellow colour in our late epidemic, led to mistakes which cost the city of Philadelphia several hundred lives.

The report of the College of Physicians has served to confirm me in an opinion, that the plagues which occasionally defoliated most of the countries in Europe in former centuries, and which were always said to be of foreign extraction, were, in most instances, of domestic origin. Between the years 1006 and 1680, the plague was epidemic 52 times all over Europe. It prevailed 14 times in the 14th century. The state of Europe, in this long period, is well known. Idleness; a deficiency of vegetable aliment; a camp-life, from the frequency of wars; famine; an uncultivated and marshy soil; small cabins; and the want of cleanliness in dress, diet, and furniture, all concurred to generate pestilential diseases. The plagues which prevailed in London every year, from 1593 to 1611, and from 1636 to 1649, I suspect were generated in that city. The diminution of plagues in Europe, more especially in London, appears to have been produced by the great change in the diet and manners of the people; also, by the more commodious and airy forms of the houses of the poor, among whom the plague *always* makes its first appearance. It is true, these plagues were said by authors to have been imported, either directly or indirectly, from the Levant; but the proofs of such importation were, in most cases, as vague and de-

cient, as they were of the West India origin of our late epidemic. The pestilential fevers which have been mentioned, have been described by authors, by the generic name of the plague; but some of them appear to have originated from putrid vegetable exhalations, and to have resembled, in most of their symptoms, the West India and *North American yellow fever.*

I am aware that the opinion and facts which I have stated upon the origin of the late epidemic, are not popular with our citizens, but I did not dare to conceal them; for I am persuaded, a knowledge and belief of them involve, in their consequences, the lives of millions that are yet unborn.

Commerce can no more be endangered than Religion, by the publication of philosophical truth. On the contrary, it must suffer most by the adoption of the traditional error which I have endeavoured to refute; for while the cause of a malignant fever is obvious to the senses, it will be easy to guard against it; but while it is believed that the disease may be imported, and no body know from what *place*, at what *time*, and in *what manner*, we shall not only be careless in the midst of filth and danger, but our city will always hold its character for health by a timid and precarious tenure. I am the more disposed to expect forgiveness from my fellow citizens for this attempt to serve them, by the recollection of the sudden change in the health of our city which followed the arching the offensive dock between Front and Third-streets, in the year 1782. By advising that measure (in which I stood nearly alone) I incurred the censure of several valuable citizens. The bills of mortality, however, soon shewed that the measure was right, and I have since seen, with great pleasure, the extraordinary healthiness of our city, ascribed, by indifferent people, to that, among other causes.

The climate of our country can no more suffer than the commerce of our city, by this investigation;

for it fixes the late fever, and all the other malignant fevers of the United States, upon putrid vegetable exhalation. Without the matrix of putrid vegetable matters, there can no more be a bilious or yellow fever generated amongst us, than there can be vegetation without earth, water, or air. To ascribe our late disease, therefore, to the exclusive influence of the atmosphere, is a reflection upon our climate which is equally unphilosophical and unjust.

Let it only be clearly proved, and boldly asserted, that a bilious yellow fever has been, and may be generated in our country, under the circumstances before mentioned, and the return of it, as also of common bilious and intermitting fevers, may every where be prevented, by a due attention to the cleanliness of the wharfs and suburbs, as well as the streets of our cities and towns ; by draining and cultivating marshy grounds in their neighbourhood, and in the neighbourhood of farm houses ; and where the last cannot be done, by sheltering them from the current-of vegetable exhalations, by means of a body of trees that are of speedy growth. In this manner, malignant and deadly fevers have been banished from most of the cities in Europe.

I have hinted, in the course of this history, at the resemblance which the yellow fever bears to the plague. Before I dismiss this part of my subject, I shall briefly enumerate the circumstances and symptoms which belong to them in common ; and, afterwards, mention those which are peculiar to each of them. The utility of this digression will, I hope, appear hereafter, when I come to deliver the history of the cure of the yellow fever. The principles which suggested and directed it, will apply alike to both diseases.

The circumstances and symptoms in which the plague and the yellow fever (as it lately appeared in our city) resemble each other, are as follow :

In being accompanied and increased by warm weather.

In affecting those people most generally who follow occupations which expose them to be much heated. The bakers were great sufferers by the plagues at Aleppo, described by Dr P. Russel.

In affecting persons who are suddenly debilitated by fear or grief.

In affecting all ages; also, the poor more than the rich; men more than women; and persons of robust, more than those of weakly habits.

In attacking with and without premonitory symptoms.

In being excited by intemperance and labour.

In being accompanied by a full, tense, depressed, regular, or an intermitting pulse.

In being accompanied by hemorrhagies. These are less frequent in the plague than in the yellow fever.—Abortions are alike common in both diseases.

The following symptoms of our late yellow fever occur likewise in the plague.

Inflammation of the brain.

Inflammation, mortifications, and carbuncles, in the alimentary canal and stomach.

Costiveness or diarrhoea. Copious sweats in the beginning of the disease, which afford relief.—A discharge of a blackish liquor from the stomach by vomiting, in the close of the disease.

A moist white tongue, in its beginning, and a dry black tongue in its last stage.

Absence of heat and thirst, in some cases.

Convulsions, syncope, great depression of spirits, exquisite pain, so as to excite screamings in the sick. Delirium, and a temporary loss of memory after recovery.

A red or a brilliant eye, and great venereal excitability in the convalescent state of the disease.

Buboës, and an exclusive affection of the lymphatic glands.

Maculæ, or red spots resembling flea-bites, watery vesicles, or blisters, which end in mortifications, petechiæ, anthrax, and carbuncles.

Sizy, dense, or dissolved blood.

The plague appears in the forms of quotidian, tertian, and quartan fevers. It has different grades, also different durations, from one day, to two, three, and four weeks. It is most fatal at its first appearance. Convulsive twitchings of the tendons are less common in the plague, than in the nervous fever. It chases away or unites with all other febrile diseases.

I have before remarked, that, during the prevalence of the plague, some foreigners escape the contagion.

The contagion of the plague infects the atmosphere of a whole city, and is propagated without contact with the sick. Many people discover marks of the presence of this contagion in their bodies, who are in apparent good health; a disposition to sweat is very common in such persons. The disease is sometimes propagated by contact by means of this sweat, when it affects the hands.

Persons infected with the contagion of the plague, communicate it before they are sensible of being affected by it. The contagion is excited at different times, from the moment it is received into the body, until the 16th day afterwards.

Persons who have had the plague, are capable of re-infection.

Brutes, as cats and dogs, are affected in some instances, with symptoms of the plague, particularly buboës.

Persons confined in Seraglios in Eastern countries, and in Monasteries in Catholic countries, also grave diggers, very often escape the plague.

The bodies of persons who die of the plague become stiff in some instances immediately after death. Tears likewise often appear on their cheeks.

Cold weather checks the plague, but not so uniformly as it does the yellow fever.

The diseases which succeed the plague, appear with more or less of its symptoms.

It will appear hereafter, that the cure of the yellow fever, accorded in several particulars with that of the plague.

The circumstances and symptoms in which the plague *differs* from the yellow fever are as follow :

A vomiting is less common in the plague, than in the yellow fever. Bile is less frequently discharged, and the stools are less foetid and offensive.

There are small horny swellings upon the breast and limbs, in the plague, which did not occur in the yellow fever. They are called *tokens*.

The contagion of the plague does not infect at so great a distance, as the contagion of the yellow fever.

It affects more universally than the yellow fever, and (with a few exceptions) it is more mortal when left to itself.

It sometimes prevails in cold weather. It prevails likewise in a greater variety of states of the atmosphere.

The body is of its usual, or of a greenish colour, after death.

The plague is of animal origin. It is derived in some instances from dead animal matters. The plagues which laid waste the Roman Empire in the reign of Justinian, are ascribed by Mr Gibbon to swarms of putrifying locusts. But the most frequent source of the plague is from human miasma, rendered pestilential, by famine, grief, the want of

cleanliness, and by a number of persons crowded together in small rooms, or houses.

The yellow fever has been confounded with the jail or hospital fever. I shall briefly enumerate the circumstances and symptoms in which they agree and disagree.

The first are as follow :

The jail fever affects persons who are debilitated by grief, fear, or intemperance.

The pulse is sometimes intermitting in this fever. This is taken notice of by Dr Ferriar.

There are marks of congestion in the brain, without any signs of inflammation in it after death. There are likewise in this fever great depression of spirits, sighing, delirium, palsey, and a debilitated state of the memory after recovery. This occurs more frequently, and in a greater degree, after the jail, than after the yellow fever.

The eye is sometimes red, and sometimes dull, in this fever. There is frequently an absence of thirst.

There is in the jail fever, in its worst state, a suppression or great heat in the urine.

Buboæ, petechiæ, pain along the spermatic cord, a swelling of one testicle; ulcers in the throat, and abscesses in different parts of the body, have all occurred occasionally in this fever.

The circumstances and symptoms in which the jail fever differs from the yellow fever are as follow :

It affects persons who have been previously weakened by other diseases, or who are of weakly habits.

The pulse is seldom full or tense, but generally weak and quick.

The tongue soon loses its whiteness and moisture, and assumes, when dry, a dark colour.

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The stomach is seldom disordered. The bowels are either in their natural state, or a diarrhoea attends. The stools are seldom bilious, or preternaturally foetid.

There are great twitchings in the tendons, and tremors in the tongue, and limbs.

Intermissions and remissions of the fever are seldom, or scarcely perceptible.

It prevails alike in the winter, spring, and autumn. It is moderated, or checked by warm weather, provided patients are placed in situations in which they can breathe a sufficient quantity of fresh air.

It is less contagious and mortal than the yellow fever.

It is derived from human miasmata, produced under inferior degrees of all those circumstances which favour the generation of the plague. It is to the plague in its degree, what the common bilious is to the yellow fever.

There is a camp-fever described by some authors, which is derived from a mixture of marsh and human miasmata. Its symptoms are compounded of those which belong to the bilious and jail fevers.

I shall not attempt to distinguish the yellow from the common bilious fever. They are only different grades of the same disease. The following appears to be the natural order of a scale of such fevers as are derived from marsh miasmata.

1. The yellow fever.

2. The common bilious remitting fever.

3. The intermitting fever.

4. The febricula of authors, or what are called "inward fevers" in the southern states. Different degrees of *force* in the remote cause, in conjunction with a difference in the sensible qualities of the air,

frequently produce all those grades of bilious or marsh fever in different seasons, and sometimes, in the same season. The increase, or abstraction of accidental stimuli, likewise often change these different states of bilious fever into each other. Thus, what are called inward fevers have often been excited by means of a ride, or a long walk, into an intermittent; an intermittent has been changed by the premature use of the bark into a remitting fever; and a common remittent has, by improper regimen or violent exercise, been excited into a yellow fever. The danger, in each case, is determined by the force of the miasmata, and the state of the air.

In contemplating the immense proportion of human misery, which is produced by pestilential diseases, we are naturally led to enquire whether their approaches are not indicated by some unusual signs in the operations of nature. What is called instinct in many animals, has repeatedly taught them to foresee and to avoid many natural evils; and if reason has not taught man to do the same, it is probably because its exercises have not been directed to those subjects.

I have endeavoured to discover whether any thing uncommon occurred in the operations of nature in the atmosphere, or in the animal and vegetable kingdoms, in the course of the winter and summer, which preceded our late epidemic. The result of my inquiries is as follows:

The winter of 1793 was usually moderate. It was supposed this had an influence upon the weather, which favoured the generation and propagation of the disease. I should have been disposed to admit this opinion, had moderate winters in Pennsylvania been uniformly succeeded by sickly autumns. Livy records, that a pestilential fever in Rome was preceded by an unusually cold winter\*.

\* Riverius, vol. ii. p. 92.

The wild pigeons were common during the winter of 1793, in many parts of Pennsylvania. But they have occasionally appeared in great flocks in our state in former winters, without having been the harbingers of a sickly autumn.

Dr P. Russel says, that uncommon and violent diseases generally preceded the plague at Aleppo. Dr Sydenham informs us, that acute inflammatory fevers were the forerunners of the plague in London in 1665. I suspect that uncommon circumstances attending certain diseases, either as to their violence or time of appearance, will be found to suggest a prelude to a sickly autumn in all countries. The scarlatina anginosa, I have remarked, was attended with an uncommon degree of inflammatory diathesis, in the month of July. Dr Porter informed me, that he had been called to several cases of dysentery, attended with symptoms of great malignity, in the neighbourhood of Frankfort, in the months of July and August. Dr Senter informed me in a letter, dated the 26th of November 1793, that, "during the last two summer months, fevers and fluxes were more obstinate than he had ever known them, at Newport in Rhode Island." My pupil, Mr Nathaniel Potter, in a letter from Caroline county in Maryland, dated November 1st 1793, gave me the following information. "On my arrival at this place, on the first of August, I was informed, by gentlemen of the faculty, that the dysentery had prevailed from the first of June to the fifteenth of July, with considerable mortality. From observations and communications from different people in this county, I did not hesitate to predict a sickly autumn; for it is an invariable maxim here, both among physicians and farmers, that if the wheat be damaged by rust or blast, a contagious dysentery is soon to follow; and the sooner in the summer the dysentery appears, the more violent and mortal will be the diseases of the autumn."

These communications, though short and few, will be useful, if they serve to lead physicians to observe and record hereafter the diseases which precede universal and mortal epidemics.

There can be no doubt of a warm summer, whether it be wet or dry, having often preceded malignant autumnal fevers. Mr Norris, in a letter to one of his friends, dated the 24th of August, O. S. says, that "the summer of 1699 was the hottest he had ever felt, and that several had died in the harvest fields with the violence of the heat." It appears, from another of Mr Norris's letters, dated the 12th of August, O. S. that the yellow fever made its first appearance in that month. The yellow fevers of 1762 and 1793 were both preceded by warm summers.

I have one more remark to mention upon this subject, which was communicated to me by a gentleman who had resided occasionally in southern and tropical countries. He informed me that he had observed, in the month of July, several weeks before the yellow fever became general, a peculiar and universal sallowness of complexion in the faces of the citizens of Philadelphia, such as he had observed to precede the prevalence of malignant bilious fevers in hot climates. Dr Dick informed me, that he had observed the same appearance in the faces of people in Alexandria, accompanied, in some cases, by a yellowness in the eyes, during the last summer, and some time before violent bilious fevers became epidemic upon the banks of the Potowmac.

With these observations I take leave of the history of our late epidemic fever. A few of its symptoms, which have been omitted in the history, will be included in the method of cure; for they were discovered or produced by the remedies which were used for that purpose.

7

O.S.

The following Page begins an account of the states  
of the Thermometer and Weather, from the first of Ja-  
nuary to the first of August; and of the state of the Ba-  
rometer, Thermometer, Wind, and Weather, from the  
first of August to the ninth of November, 1593. The  
times of observation for the first three months, are at  
7 in the morning, and 2 in the afternoon; for the next  
five months, they are at 6 in the morning, and 3 in the  
afternoon. From the first of October to the ninth of  
November, they are as in the first three months.

January, 1793.

February, 1793.

	Therm. D. 17 h 12 h	Weather.		Therm. 17 h 12 h	Weather.
1	27 30	Cloudy.		26	Fair, hazey.
2	30 41	Fair, cloudy.		25 34	Rain, ditto.
3	30 33	Cloudy, rain.		33 37	Cloudy, fair.
4	38 41	Rain, cloudy.		25 46	Cloudy, fair.
5	35 42	Fair, cloudy.		36 44	Cloudy, ditto.
6	33 47	Cloudy, fair.		35 46	Cloudy, rain.
7	33 51	Fair, fair.		36 40	Cloudy, fair.
8	32 49	Fair, ditto.		28 44	Cloudy, ditto.
9	33 48	Hazey, fair.		42 50	Rain, fair.
10	38 51	Fair, ditto.		38 40	Cloudy, fair.
11	35 48	Fair, clouds.		19 27	Fair, cloudy.
12	31 42	Fair, ditto.		20 28	Snow, cloudy.
13	28 42	Fair, ditto.		22 31	Cloudy, snow.
14	25 27	Hail, snow, fleet.		27 39	Cloudy, fair.
15	32 37	Clouds, mist.		18 40	Fair, ditto.
16	37 39	Rain, ditto.		29 42	Cloudy, ditto.
17	37 45	Rain, snow, fair.		44 48	Rain, ditto.
18	32 52	Fair, ditto.		39 49	Cloudy, fair.
19	37 48	Fair, ditto.		31 41	Cloudy, rain.
20	33 47	Hazey, cloudy.		52 53	Rain, fair.
21	36 47	Cloudy, fair.		37 49	Fair, ditto.
22	27 32	Fair, ditto.		29 34	Fair, ditto.
23	22 37	Fair, ditto.		22 34	Snow, cloudy.
24	30 39	Cloudy, ditto.		54 59	Rain, cloudy.
25	30 41	Fair, hazey.		34 35	Cloudy, ditto.
26	31 —	Fair.		35 43	Rain, mist.
27	23 38	Fair, cloudy, snow.	43 43		Rain, cloudy.
28	35 45	Cloudy, fair.	14 26		Fair, ditto.
29	29 37	Fair, ditto.			
30	22 23	Snow, hail.			
31	25 32	Cloudy, fair.			

March, 1793.

April, 1793.

D. Therm. 17 h 12 h	Weather.	Therm. 17 h 12 h	Weather.
1 20 38	Fair, ditto.	45 70	Cloudy, fair.
2 31 51	Hazey, Cloudy.	47 71	Fair, ditto.
3 48 63	Rain, fair.	56 80	Fair, ditto.
4 43 61	Hazey, ditto.	51 72	Cloudy, fair.
5 51 52	Rain, fair.	53 61	Cloudy, rain.
6 32 50	Fair, ditto.	60 76	Misty, fair.
7 36 62	Fair, do. clouds.	51 65	Fair, ditto.
8 54 65	Cloudy, rain.	46 74	Fair, ditto.
9 26 41	Fair, ditto.	55 71	Fair, cloudy.
10 29 51	Fair, ditto.	50 56	Fair, ditto.
11 43 55	Rain, ditto.	37 63	Fair, ditto.
12 40 43	Cloudy, ditto.	54 62	Cloudy, rain, fair.
13 38 39	Cloudy, fair.	49 62	Fair, ditto.
14 26 44	Fair, ditto.	50 70	Fair, ditto.
15 32 59	Fair, ditto.	45 55	Rain, cloudy.
16 52 62	Cloudy, fair.	46 62	Cloudy, fair.
17 51 72	Cloudy, fair.	48 67	Fair, clouds, fair.
18 58 69	Hazey, cloudy.	52 66	Cloudy, fair.
19 53 59	Fair, ditto.	52 75	Fair, ditto.
20 42 61	Fair, ditto.	52 49	Rain, cloudy.
21 41 43	Rain, cloudy.	44 47	Cloudy, ditto.
22 31 47	Fair, ditto.	43 46	Rain, cloudy.
23 35 57	Fair, ditto.	42 63	Fair, ditto.
24 37 50	Fair, ditto.	44 68	Fair, ditto.
25 35 59	Fair, ditto.	45 65	Cloudy, cloudy.
26 47 54	Cloudy, rain.	53 57	Cloudy, rain.
27 43 51	Fair, cloudy.	47 46	Rain, ditto.
28 33 45	Fair, clouds, fair.	44 54	Rain, cloudy.
29 34 57	Fair, ditto.	40 59	Fair, ditto.
30 41 58	Cloudy, fair.	40 65	Fair, ditto.
31 42 61	Cloudy, fair.		

May, 1793.

June, 1793.

	Therm. D. 17 h 12 h	Weather.		Therm. 17 h 12 h	Weather.
1	45 69	Foggy, cloudy.		53 61	Rain, showery.
2	52 73	Fog, clouds, fair.		54 64	Clouds, showers.
3	60 63	Rain, ditto.		55 62	Cloudy, rain, fair.
4	60 80	Fair, ditto.		54 60	Rain, ditto. cloudy.
5	55 56	Cloudy, ditto.		58 72	Cloudy, fair, rain.
6	47 58	Cloudy, fair.		— 71	Cloudy, rain.
7	50 68	Cloudy, fair.		68 78	Fair, ditto.
8	59 78	Cloudy, fair.		65 —	Fair, ditto.
9	61 79	Foggy, fair.		70 88	Fog, fair.
10	63 71	Rain, hazey.		74 90	Fair, ditto.
11	55 75	Cloudy, fair.		76 90	Fair, ditto.
12	61 76	Cloudy, rain.		75 88	Fair, showers.
13	57 78	Fair, ditto.		74 81	Cloudy, rain.
14	59 83	Fair, cloudy.		63 77	Fair, ditto.
15	60 71	Fair, ditto.		63 82	Fair, hazey.
16	50 69	Fair, ditto.		67 85	Fair, ditto.
17	48 74	Fair, ditto.		74 89	Fair, showers.
18	61 81	Cloudy, fair.		73 88	Fair, ditto.
19	65 85	Fair, rain.		77 91	Fair, ditto.
20	65 87	Fair, ditto.		79 88	Fair, rain, fair.
21	68 86	Fair, ditto. clouds.		75 85	Cloudy, rain.
22	72 80	Clouds, gusts.		58 78	Cloudy, fair.
23	94 79	Cloudy, fair.		58 78	Fair, ditto.
24	58 75	Fair, ditto.		60 79	Fair, ditto.
25	52 70	Fair, cloudy.		67 74	Cloudy, rain.
26	61 66	Rain, ditto.		66 69	Cloudy, rain.
27	68 84	Cloudy, fair.		68 80	Cloudy, fair.
28	70 68	Fair, clouds, rain.		71 85	Cloudy, fair.
29	57 62	Cloudy, rain, clouds		77 88	Cloudy, ditto.
30	54 57	Cloudy, rain.		74 90	Fair, ditto.
31	54 60	Clouds, ditto.			

JULY, 1793.

Days.	Barometer.		Therm.		Wind.		Weather.	
	6 A. M.	3 P. M.	6 A. M.	3 P. M.	6 A. M.	3 P. M.		
1	30 0	29 9	77	88	W	W	fair.	
2	29 8	29 7	77	81	W		fair, showers.	
3	29 9	30 0	74	80	E	E	cloudy.	
4	30 1	30 0	70	83	E	SW	cloudy, fair, rain.	
5	30 0	29 9	76	90	NW	SW	fair, ditto.	
6	29 9	29 9	78	91	SW	SW	cloudy, thunder.	
7	29 9	30 0	73	88	NE	NW	fair, clouds.	
8	30 1	30 1	72	85	E	E	cloudy, fair.	
9	30 0	29 8	73	81	S	SW	cloudy, ditto.	
10	30 0	30 0	70	84	W	NW	fair, ditto.	
11	30 0	30 0	74	88	NW	NW	fair, clouds.	
12	30 1	30 2	70	84	N	N	fair, ditto.	
13	30 1	30 0	68	83	NW	NW	fair, ditto.	
14	30 0	30 0	65	80	N	Calm	fair, hazey.	
15	30 0	29 9	66	75	SW	SW	cloudy, ditto.	
16	29 8	29 7	70	83	W	W	rain, fair.	
17	29 8	29 9	68	81	NW	NW	fair, ditto.	
18	30 0	30 0	66	86	W	SW	fair, ditto.	
19	29 9	29 9	75	85	SW	W	fair, cloudy, rain.	
20	30 0	30 0	72	87	W	NW	fair, do. shower.	
21	30 1	30 1	70	86	NW	NW	fair, ditto.	
22	30 0	30 0	72	87	SW	SW	fair, ditto.	
23	30 0	30 0	73	91	SW	SW	fair, cloudy.	
24	29 9	29 9	75	89	Calm	W	cloudy, fair.	
25	30 1	30 1	71	83	NW	NNW	fair, ditto.	
26	30 2	30 2	63	82	N	NE	fair, ditto.	
27	30 2	30 1	64	81	Scalm	S	fair, cloudy.	
28	30 1	30 0	72	85	Calm	NNE	cloudy, fair.	
29	30 1	30 1	74	85	SSE	NE	cloudy, do. rain.	
30	30 1	30 0	73	86	S	SW	cloudy, fair.	
31	29 9	29 8	76	80	SSW	SW	cloudy, rain, fair.	

AUGUST, 1793.

Barometer.				Therm.		Wind.		Weather.	
6 A.M.	3 P.M.	6 A.M.	3 P.M.	6 A.M.	3 P.M.	6 A.M.	3 P.M.	6 A.M.	3 P.M.
1 29	95	30	0	65	77	WNW	NW	cloudy, fair,	
2 30	1	30	1	63	81	NW	SW	fair, fair,	
3 30	6	29	95	62	82	N	NNE	fair, fair,	
4 29	97	30	0	65	87	S	SW	fair, fair,	
5 30	5	30	1	73	90	SSW	SW	fair, fair,	
6 30	2	30	0	77	87	SW	W	cloudy, fair,	
7 30	12	30	1	68	83	NW	W	fair, fair,	
8 30	1	29	95	69	86	SSE	SSE	fair, rain,	
9 29	8	29	75	75	85	SSW	SW	cloudy, fair,	
10 29	9	29	9	67	82	W	SW	fair, fair,	
11 30	0	30	0	70	84	SW	WSW	cloudy, cloudy,	
12 30	0	30	0	70	87	W	W	fair, fair,	
13 30	5	30	c	71	89	SW	W	fair, fair,	
14 30	0	29	95	75	82	SW	SW	fair, rain,	
15 30	0	30	1	72	75	NNE	NE	fair, cloudy,	
16 30	1	30	1	70	83	NNE	NE	fair, fair,	
17 30	1	30	c	71	86	SW	SW	fair, fair,	
18 30	1	30	1	73	89	calm	SW	fair, fair,	
19 30	1	30	0	72	82	N	N	fair, cloudy,	
20 30	1	30	1	69	82	NNE	NNE	fair, fair,	
21 30	15	30	25	62	83	N	NNE	fair, fair,	
22 30	3	30	35	63	86	NE	SE	fair, fair,	
23 30	25	30	15	63	85	calm	S	fair, fair,	
24 30	1	30	1	73	81	calm	calm	cloudy, rain,	
25 30	1	30	1	71	66	NE	NE	rain, gr. rain	
26 30	15	30	2	59	69	NE	NE	cloudy, cloudy,	
27 30	2	30	2	65	73	NE	NE	cloudy, cloudy,	
28 30	2	30	15	67	80	S	calm	cloudy, clearin.	
29 30	16	30	15	72	86	calm	SW	cloudy, fair,	
30 30	1	30	1	74	87	calm	SW	fair, fair,	
31 30	0	30	0	74	84	SW	NW	rain, fair.	

SEPTEMBER, 1793.

Barometer.	Therm.		Wind.		Weather.	
	6 A. M.	3 P. M.	6 A. M.	3 P. M.	6 A. M.	3 P. M.
1 30 0	29 30	71 86	calm	SW	fog,	fair,
2 29 75	29 8	73 86	SW	SW	fair,	fair,
3 80 0	0	60	NW	N	fair,	fair,
4 30 15	30 15	55 75	W	W	fair,	fair,
5 30 15	30 16	62 80	SE	S	fair,	cloudy,
6 29 97	29 95	70 89	WSW	W	fair,	cloudy,
7 30 0	30 0	65 77	WNW	NW	fair,	fair,
8 30 1	30 1	64 70	calm	calm	cloudy,	cloudy,
9 30 0	30 0	66 80	SE	NW	rain,	fair,
10 30 0	30 0	64 72	N	NNE	fair,	cloudy,
11 30 1	30 0	62 72	NNE	N	cloudy,	fair,
12 29 96	29 9	58 76	NW	NNW	fair,	fair,
13 29 95	30 0	57 72	NW	N	fair,	fair,
14 30 0	30 5	58 79	NW	NW	fair,	fair,
15 30 0	29 97	65 80	N	S	fair,	fair,
16 29 9	29 7	70 84	S	SW	cloudy,	fair,
17 29 8	29 85	66 67	N	N	cloudy,	cloudy,
18 30 3	3	44	N		fair,	
19 30 4	30 35	45 70	calm	SW	fair,	fair,
20 30 3	30 15	54 69	calm	SE	hazey,	hazey,
21 30 0	29 0	59 78	calm		cloudy,	fair,
22 30 0	30 0	63 83	calm		cloudy,	fair,
23 30 1	30 1	62 81	calm	SE	cloudy,	cloudy,
24 30 2	30 2	65 70	NE	ENE	cloudy,	fair,
25 30 15	30 0	61 68	NE	NE	cloudy,	cloudy,
26 29 8	29 7	58 79	N	N	cloudy,	fair,
27 29 7	7	64	NW	NW	cloudy,	fair,
28 30 5	30 15	54 73	NW	NW	fair,	fair,
29 30 3	30 3	56 74	NE	ENE	cloudy,	fair,
30 30 35	30 3	57 75	calm	SW	foggy,	fair,

O C T O B E R , 1793.

Barometer.	7 A. M.		2 P. M.		Therm.		Winds.		Weather.	
	7 A. M.	2 P. M.	7 A. M.	2 P. M.						
1 30 15 30	5	64	80	SW	SW		SW		cloudy, fair,	
2 29 9 30	5	70	72	W	NNW		NNW		cloudy, fair,	
3 30 2 30	15	50	72	W	SW		SW		fair, fair	
4 29 75 29	7	59	72	SW	W		W		cloudy, cloudy,	
5 30 0 30	1	58	66	N	N		N		fair, fair,	
6 30 3 30	3	43	66	NE	W		W		fair, fair,	
7 30 45		46		calm					fair,	
8 30 6 30	6	53	68	N	N		N		fair, fair,	
9 30 5 30	4	53	70	NW	NW		NW		fair, fair,	
10 30 2 30	2	49	74	E	NW		NW		fair, fair,	
11 30 0 29	85	51	74	W	W		W		fair, fair,	
12 26 6 29	55	58	64	SW	NW		NW		rain, rain,	
13 29 85 29	9	49	69	NW	NW		NW		fair, fair,	
14 30 5 30	0	52	76	SW	SW		SW		calm, fair,	
15 29 75 29	8	56	54	SW	N		N		fair, rain,	
16 30 0 30	0	37	53	NNW	N		N		fair, fair,	
17 30 1 30	1	37	60	NE	NE		NE		fair, fair,	
18 30 1 30	1	41	62	NW	NW		NW		fair, fair,	
19 30 0 29	9	51	66	N	N		N		cloudy, fair,	
20 30 0 3	0	44	54	NW	N		N		fair, fair,	
21 30 0 30	2	49	59	N	NW		NW		fair, fair,	
22 29 6 29	5	51	65	NW	NW		NW		fair, fair,	
23 29 8 29	8	47	60	W	W		W		fair, fair,	
24 30 3 30	4	36	59	W	NW		NW		fair, fair,	
25 30 4 30	3	46	71	S	S		S		cloudy, do h-w.	
26 30 2 30	2	60	72	calm	SW		SW		cloudy, cloudy,	
27 30 3 30	3	44	44	NNE	NNE		NNE		cloudy, cloudy,	
28 30 2 30	1	34	37	N	N		N		cloudy, cloudy,	
29 29 85 29	85	28	44	NNW	NW		NW		fair, fair,	
30 30 1 30	1	28	49	calm	SW		SW		hazey, hazey,	
31 30 15 30	2	42	45	calm	NNE		NNE		cloudy, rain,	

NOVEMBER, 1793.

	Barometer.		Therm.		Winds.		Weather.	
	7 A. M.	2 P. M.	7 A. M.	2 P. M.	7 A. M.	2 P. M.	7 A. M.	2 P. M.
1 30	1	30	1 40	41	NNE	NE	rain,	cloudy,
2 30	3	30	25	32	49	NNE	NE	fair,
3 30	1	30	0	43	56	calm	SW	cloudy,
4 29	8	29	9	55	67	SW	SW	cloudy,
5 30	15	30	1	50	64	NE	NE	fair,
6 29	8	29	65	63	67	S	S	cloudy,
7 29	8	29	8	44	64	calm	SW	cloudy,
8 29	8	29	85	43	56	SSW	SW	fair,
9 29	9	29	95	42	64	SW	SW	fair,

F 3

## OF THE METHOD OF CURE.

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IN the introduction to the history of the fever, I mentioned the remedies which I used with success, in several cases which occurred in the beginning of August. I had seen, and recorded in my note book, the efficacy of gentle purges in the yellow fever of 1762 ; but finding them unsuccessful after the 20th of August, and observing the disease to assume uncommon symptoms of great indirect debility, I laid them aside, and had recourse to a gentle vomit of ipecacuanha on the first day of the fever, and to the usual remedies for exciting the action of the sanguiferous system. I gave bark in all its usual forms of infusion, powder, and tincture. I joined wine, brandy, and aromatics with it. I applied blisters to the limbs, neck, and head. Finding them all ineffectual, I attempted to rouse the system by wrapping the whole body, agreeably to Dr Hume's practice, in blankets dipped in warm vinegar. To these remedies I added one more : I rubbed the right side with mercurial ointment, with a view of exciting the action of the vessels in the whole system, through the medium of the liver, which I then supposed to be principally, though symptomatically, affected by the disease. None of these remedies appeared to be of any service ; for although three out of thirteen recovered of those to whom they were applied, yet I have reason to believe that they would have recovered much sooner had the cure been trusted to nature. Perplexed and distressed by my want of success in the treatment of this fever, I waited upon Dr Stephens, an eminent and respectable physician from St Croix,

who happened then to be in our city, and asked for such advice and information upon the subject of the disease, as his extensive practice in the West Indies would naturally suggest. He politely informed me, that he had long ago laid aside evacuations of all kinds in the yellow fever; that they had been found to be hurtful, and that the disease yielded more readily to bark, wine, and above all, to the use of the cold bath. He advised the bark to be given in large quantities by way of glyster, as well as in the usual way; and he informed me of the manner in which the cold bath should be used, so as to derive the greatest benefit from it. This mode of treating the yellow fever appeared to be reasonable. I had used bark in the manner he recommended it, in several cases of sporadic yellow fever with success in former years. I had, moreover, the authority of several other physicians of reputation in its favour. Dr Cleghorn tells us, that "he sometimes gave the bark when the bowels were full of vicious humours. These humours (he says) are produced by the fault of the circulation. The bark, by bracing the solids, enables them to throw off the excrementitious fluids, by the proper emunctories \*."

I began the use of each of Dr Stevens's remedies the next day after my interview with him, with great confidence of their success. I prescribed bark in large quantities; in one case, I ordered it to be injected into the bowels every four hours. I directed buckets full of cold water to be thrown frequently upon my patients. The bark was offensive to the stomach, or rejected by it in every case in which I prescribed it. The cold bath was grateful, and produced relief in several cases by inducing a moisture on the skin. For a while I had hopes of benefit to my patients from the use of these remedies, but in a few days, I was distressed to find they were not more

effectual than those I had previously used. Three out of four of my patients died, to whom the cold bath was administered, in addition to the tonic remedies before mentioned.

Baffled in every attempt to stop the ravages of this fever, I anticipated all the numerous and complicated distresses in our city, which pestilential diseases have so often produced in other countries. The fever had a malignity and an obstinacy, which I had never before observed in any disease, and it spread with a rapidity and mortality, far beyond what it did in the year 1762. Heaven alone bore witness to the anguish of my soul in this awful situation. But I did not abandon a hope that the disease might yet be cured. I had long believed that good was commensurate with evil; and that there does not exist a disease for which the goodness of Providence has not provided a remedy. Under the impression of this belief, I applied myself with fresh ardour to the investigation of the disease before me. I ransacked my library, and pored over every book that treated of the yellow fever. The result of my researches for a while was fruitless. The accounts of the symptoms and cure of the disease, by the authors I consulted, were contradictory, and none of them appeared altogether applicable to the prevailing epidemic. Before I desisted from the enquiry to which I had devoted myself, I recollect that I had among some old papers, a manuscript account of the yellow fever, as it prevailed in Virginia in the year 1741, which had been put into my hands by Dr Franklin, a short time before his death. I had read it formerly, and made extracts from it into my lectures upon that disorder. I now read it a second time. I paused upon every sentence; even words in some places arrested and fixed my attention: In reading the history of the method of cure, I was much struck with the following passages.

" It must be remarked, that this evacuation, (meaning by purges) is more necessary in this, than in most other fevers. The abdominal viscera are the parts principally affected in this disease, but by this timely evacuation, their feculent corruptible contents are discharged, before they corrupt, and produce any ill effects, and their various emunctories and secerning vessels are set open, so as to allow a free discharge of their contents, and consequently, a security to the parts themselves, during the course of the disease. By this evacuation, the very mineral of the disease, proceeding from the putrid miasma fermenting with the salivary, bilious, and other inquiline humours of the body, is sometimes eradicated by timely emptying the abdominal viscera on which it first fixes, after which a gentle sweat, does, as it were, nip it in its bud. Where the primæ viæ, but especially the stomach, is loaded with an offensive matter, or contracted, and convulsed with the irritation of its stimulus, there is no procuring a laudable sweat, till that is removed; after which, a necessary quantity of sweat breaks *out of its own accord*, these parts promoting it, when, by an absterging medicine, they are eased of the burden or stimulus which oppresses them."

" All these acute putrid fevers ever require some evacuation to bring them to a perfect crisis and solution, and that even by stools, which must be promoted by art, where nature does not do the business herself. On this account, an *ill timed scrupulousness about the weakness of the body*, is of bad consequences in these urging circumstances; for it is that which seems chiefly to make evacuations necessary, which nature ever attempts, after the humours are fit to be expelled, but is not able to accomplish, for the most part, in this disease; and I can affirm, that I have given a purge in this case, when the pulse was so low,

*that it could hardly be felt, and the debility extreme,  
yet both one and the other have been restored by it."*

" This evacuation must be procured by lenitive chologogue purges."

Here I paused. A new train of ideas suddenly broke in upon my mind. I believed the weak and low pulse which I had observed in this fever, to be the effect of debility of the *indirect* kind ; but the unsuccessful issue of purging, and even of a spontaneous diarrhoea, in a patient of Dr Hutchinson's, had led me not only to doubt of, but to dread its effects. My fears from this evacuation were confirmed, by the communications I had received from Dr Stevens. I had been accustomed to raising a weak and low pulse in pneumonia and apoplexy, by means of blood-letting, but I had attended less to the effects of purging in producing this change in the pulse. Dr Mitchell in a moment dissipated my ignorance and fears upon this subject. I adopted his theory and practice, and resolved to follow them. It remained now only to fix upon a suitable purge to answer the purpose of discharging the contents of the bowels. I have before described the state of the bile in the gall bladder, and duodenum, in an extract from the history of a dissection made by Dr Mitchell. I suspected that my want of success in discharging this bile, in several of the cases in which I attempted the cure by purging, was owing to the feebleness of my purges. I had been in the habit of occasionally purging with calomel in bilious and inflammatory fevers, and had recommended the practice the year before in my lectures, not only from my own experience, but upon the authority of Dr Clark. I had, moreover, other precedents for its use in the practice of Sir John Pringle, Dr Cleghorn, and Dr Balfour, in diseases of the same class with the yellow fever. But these were not all my vouchers for the safety and

efficacy of calomel. In my attendance upon the military hospitals during the late war, I had seen it given combined with jalap, in the bilious fever, by Dr Thomas Young, a senior surgeon in the hospitals. His usual dose was ten grains of each of them. This was given once or twice a day, until it procured large evacuations from the bowels. For a while I remonstrated with the Doctor against this purge, as being disproportioned to the violence and danger of the fever ; but I was soon satisfied that it was as safe as cremor tartar, or glauber's salts. It was adopted by several of the surgeons of the hospital, and was universally known, and sometimes prescribed, by the simple name of *ten and ten*. This mode of giving calomel occurred to me in preference to any other. The jalap appeared to be a necessary addition to it, in order to quicken its passage through the bowels ; for calomel is slow in its operation, more especially when it is given in large doses. I resolved, after mature deliberation, to prescribe this purge. Finding ten grains of jalap insufficient to carry the calomel through the bowels, in the rapid manner I wished, I added fifteen grains of the former, to ten of the latter ; but even this dose was slow, and uncertain in its operation. I then issued three doses, each consisting of fifteen grains of jalap, and ten of calomel ; one to be given every six hours, until they procured four or five large evacuations. The effects of this powder not only answered, but far exceeded my expectations. It perfectly cured four out of the first five patients to whom I gave it, notwithstanding some of them were advanced several days in the disorder. Mr Richard Spain, a block-maker, in Third-street, took eighty grains of calomel, and rather more of rhubarb and jalap mixed with it, on the two last days of August, and on the first day of September. He had passed twelve hours, before I began to give him this medicine, without a pulse, and with a cold sweat on all his limbs. His relations had given him

over, and one of neighbours complained to me of my neglecting to advise them to make immediate preparations for his funeral. But in this situation, I did not despair of his recovery. Dr Mitchell's account of the effects of purging in raising the pulse, exciting a hope that he might be saved, provided his bowels could be opened. I now committed the exhibition of the purging medicine to Mr Stall, one of my pupils, who mixed it, and gave it with his own hand three or four times a day. At length, it operated and produced two copious, fetid stools. His pulse rose immediately afterwards, and an universal moisture on his skin succeeded the cold sweat on his limbs. In a few days he was out of danger, and he now lives in good health, as the first fruits of the efficacy of mercurial purges in the yellow fever.

After such a pledge of the safety and success of my new medicine, I gave it afterwards with confidence. I communicated the prescription to such of the practitioners as I met in the streets. Some of them I found had been in the use of calomel for several days; but as they had given it in small and single doses only, and had followed it by large doses of bark, wine, and laudanum, they had done little or no good with it. I imparted the prescription to the College of Physicians, on the third of September, and endeavoured to remove the fears of my fellow citizens, by assuring them that the disease was no longer incurable. Mr Lewis the lawyer, Dr M'Ilvaine, Mrs Bethel, her two sons, and a servant maid, and Mr Peter Baynton's whole family, (nine in number) were some of the first trophies of this new remedy. The credit it acquired, brought me an immense accession of business. It still continued to be almost uniformly effectual in all those which I was able to attend, either in person, or by my pupils. Dr Griffitts, Dr Say, Dr Pennington, and my former pupils who had settled in the city, viz. Dr Leib, Dr Porter, Dr Annan, Dr Woodhouse, and Dr Mease, were among

the first physicians who adopted it. I can never forget the transport with which Dr Pennington ran across the street, to inform me, a few days after he began to give strong purges, that the disease yielded to them in every case. But I did not rely upon purging alone to cure the disease. The theory of its proximate cause, which I had adopted, led me to use other remedies, to abstract excess of stimulus from the system. These were *blood-letting, cool air, cold drinks, low diet, and applications of cold water to the body.* I had bled Mrs Bradford, Mrs Leaming, and one of Mrs Palmer's sons, with success, early in the month of August. But I had witnessed the bad effects of bleeding in the first week in September, in two of my patients who had been bled without my knowledge, and who appeared to have died in consequence of it. I had, moreover, heard of a man who had been bled on the first day of the disorder, who died in twelve hours afterwards. These cases produced caution, but they did not deter me from bleeding, as soon as I found the disease to change its type, and, instead of tending to a crisis on the third, to protract itself to a latter day. I began by drawing a small quantity at a time. The appearance of the blood, and its effects upon the system, satisfied me of its safety and efficacy. Never before did I experience such sublime joy as I now felt, in contemplating the success of my remedies. It repaid me for all the toils and studies of my life. The conquest of this formidable disease was not the effect of accident, nor of the application of a single remedy; but, it was the triumph of a principle in medicine. The reader will not wonder at this joyful state of my mind, when I add a short extract from my notebook, dated the 10th of September: "Thank God! Out of one hundred patients, whom I have visited, or prescribed for this day, I have lost none."

Being unable to comply with the numerous demands, which were made upon me for the purging powders,

notwithstanding I had requested my sister and two other persons to assist my pupils in putting them up ; and finding myself unable to attend all the persons who sent for me, I furnished the apothecaries with the receipe for the mercurial purges, together with a copy of the following directions for giving them, and for the treatment of the disorder.

" As soon as you are affected, (whether by *night* or day) with a pain in the head, or back, sickness at stomach, chills or fever ; more especially, if those symptoms be accompanied by a redness, or faint yellowness in the eyes, take one of the powders in a little sugar and water, every six hours, until they produce four or five *large* evacuations from the bowels —drink plentifully of water gruel, or barley water, or chicken water, or any other mild drink that is agreeable, to assist the operation of the physic. It will be proper to lie in bed while the medicine is operating ; by which means a plentiful sweat will be more easily brought on. After the bowels are thoroughly cleansed, if the pulse be *full* or *tense*, eight or ten ounces of blood should be taken from the arm, and *more*, if the tension or fulness of the pulse should continue. Balm tea, toast and water, lemonade, tamarind water, weak camomile tea, or barley water, should be drank during this state of the disorder— and the bowels should be kept constantly open, either by another powder, or by small doses of tremor tartar, or cooling salts, or by common opening glisters ; but if the pulse should become *weak* and *low* after the bowels are cleansed, infusions of camomile and snake-root in water, elixir of vitriol, and laudanum ; also wine and water, or wine, punch, and porter, should be given, and the bark, either in infusion in water or in substance, may be administered in the intermission of the fever. Blisters may likewise be applied to the sides, neck, or head, in this state of the disorder, and the lower limbs may be wrapped up in flannels, wetted in hot vinegar or water. The food

should consist of gruel, sago, panada, tapioca, tea, coffee, weak chocolate, wine whey, chicken broth, and the white meats, according to the weak or active state of the system. The fruits of the season may be eaten with advantage at all times. Fresh air should be admitted into the room in all cases, and cool air when the pulse is full and tense. The floor should be sprinkled now and then with vinegar, and the discharges from the body be removed as speedily as possible."

"The best preventatives of the disorder, are a temperate diet, consisting chiefly of vegetables, great moderation in the exercises of body and mind, warm cloathing, cleanliness, and a gently open state of the bowels."

Hitherto there had been great harmony among the physicians of the city, although there was a diversity of sentiment as to the nature and cure of the prevailing fever. But this diversity of sentiment and practice, was daily lessening, and would probably have ceased altogether in a few days, had not the following publication, subscribed A. K. and said to be written by Dr Adam Kuhn, made its appearance on the 11th of September, in the General Advertiser, from which it was copied into all the papers of the city.

PHILADELPHIA, Sept. 7th, 1793.

"SIR,—I received your letter to day, and shall with pleasure give you every information in my power, respecting the malignant fever which proves so fatal among us. As I consider debility and putrefaction the alarming circumstances to be attended to, and to be obviated from the earliest commencement of the disease, my method of treatment is instituted accordingly, and has been generally successful. I do not administer any emetic, neither do I give a laxative, unless indicated by costiveness, when

I recommend cream of tartar or castor oil, but prefer a clyster to either. In case of nausea, I order a few bowls of camomile tea to be taken; if the nausea continues, it is to be relieved with the saline draught in a state of effervescence, elixir of vitriol, and if necessary, laudanum. The sickness of the stomach may also be alleviated by applying mint, cloves, or any other spice, with wine or spirits, to the pit of the stomach. The stomach being composed, 20 drops of elixir of vitriol are to be taken every two hours, in a tea cup-full of strong cold camomile tea, and if bark can be retained, two drachms of the best pale bark in substance are to be given every two hours, alternately with the elixir of vitriol. When an ounce of bark has been administered in this manner, the dose is to be diminished to one drachm every two hours, as the continuance of the large doses might disorder the stomach or bowels. Should the bark prove purgative, it will be necessary to give 10 or 15 drops of laudanum after every stool. But if the bark cannot be retained on the stomach, 20 drops of elixir of vitriol are to be taken every hour, and recourse must be had to bark/clysters.

" Two ounces of bark are to be put into three half pints of boiling water, and boiled down to a pint; the decoction to be strained, and to 4 ounces of the decoction we add from two to four drachms of finely powdered bark and fifty drops of laudanum. This mixture is to be injected every four hours, or oftner, if the symptoms are violent. One or two glasses of Madeira wine may be added to each injection, where the debility is great. Wine is to be given from the beginning; at first the weaker wines, such as claret and rhenish; if these cannot be had, Lisbon or Madeira diluted with rich lemonade. The quantity is to be determined by the effects it produces and by the state of debility which prevails, guarding against its occasioning or encreasing the heat, restlessness and delirium. I prefer pale bark, from a

conviction that most of the red bark offered for sale, is adulterated. But I place the greatest dependence for the cure of the disease, on throwing cool water twice a day over the naked body. The patient is to be placed in a large empty tub, and two buckets full of water, of the temperature of about 75 or 80 degrees of Fahrenheit's thermometer, according to the state of the atmosphere, are to be thrown over him.

" He is then to be wiped dry and put to bed ; it is commonly followed by an easy perspiration, and is always attended with great refreshment to the patient. This remedy however must be applied from the earliest attack of the disease, and continued regularly through the whole course of it. Of regimen it is needless to say much to you : ripe fruits, sago with wine, and rich wine-whey, are the most proper. A spacious chamber, with a free circulation of air, and repeatedly changing the bed and body linen, are highly necessary. If the bark clysters should bring on costiveness, the laudanum may occasionally be omitted ; if this is not attended with the desired consequences, we have recourse to a common injection. Sprinkling the chamber with vinegar, washing the face, neck, hands and feet with it, and then wiping them dry, will have their use. The fumes of vinegar and of nitre will contribute much to sweeten the air in the chamber.

I am, &c.

A. K.

" N. B. The practice of applying the cold bath in fevers is not new. In a malignant fever, which prevailed at Breslau in Silesia, and proved extremely fatal, yielded to none of the usual remedies, Dr De Haehn a physician of the place had recourse to this remedy, and found it effectual. It has also been used with advantage in England in putrid fevers. In

many of the West India islands it is generally employed in their malignant fevers. Dr Stevens, a gentleman of high character in his profession, who is now in this city, assures me that in the island of St. Croix, where he practised medicine many years, it has been found more effectual than any method heretofore practised.

" I am moreover indebted to Dr Stevens for the following observations : that laxatives are never employed but when clysters are not attended with the desired effect of moving the bowels ; that in violent attacks of the disease the bark clysters are repeated every two hours, and the water is applied to the body every 6 or 8 hours, and even more frequently ; that when there is a disposition to diarrhoea, the elixir of vitriol has a tendency to increase it, and is therefore laid aside, and that the disease which he has seen in this country, is of the same nature with the malignant fever of the West Indies."

To obviate the effects of this letter upon the minds of the citizens, I published the next day an account of the ill success which had attended the use of the remedies recommended by Dr Kuhn, in my practice, and of the happy effects of mercurial purges and bleeding. This publication was concluded with the following remarks.

" The yellow fever now prevailing in our city, differs very materially from that which prevails in the West Indies, and in several particulars from that of the year 1762. This will easily be believed, by all those who attend to the influence of climate and seasons, upon diseases. Prescribing for the *name* of a disease, without a due regard to the above circumstances, has slain more than the sword.

" My only design, in withdrawing myself for a moment from the solemn duties to my fellow citizens, in which I am now engaged, is to bear a testimony against a method of treating the present dis-

order, which if persisted in, would probably have aided it in desolating three fourths of our city.

" I have had so many unequivocal proofs of the success of the short and simple mode which I have adopted of treating this disorder, that I am now satisfied, that under more favourable circumstances of attendance upon the sick, the disease would yield to the power of medicine with as much certainty as a common intermitting fever.

*September 11th, 1793.*      §

BENJ. RUSH."

The above address to the citizens, produced the following letter from Dr Kuhn to the Mayor of the city.

" SIR,—If you are of opinion that the enclosed statement can have the least tendency to abate the apprehensions of the citizens, I beg of you to make any use of it you may think proper.

I am, with respect,

Your most humble servant,

*September 13th, 1793.*      §

A. KUHN.

*Matthew Clarkson, Esq. Mayor  
of the city of Philadelphia.*      §

" From the 23d of August, the day on which I saw the first patient in the yellow fever, to the third of September, when I was myself confined with a remittent fever, I visited sixty persons ill of various complaints. The greater part were indisposed with remittent and intermitting fevers, which always prevail among us at this season of the year, which all yielded readily to our mode of treating those diseases, except in one gentleman, who had been many years an invalid. Seven only of this number had the yellow fever; three of them were patients of other gentlemen of the Faculty. Of these seven, I was

called to four, in the early stage of the disease. Three of them are now well; the other was in the fourth day of the disease, when I became unwell myself. He had then no unfavourable symptoms; but died on the eighth day from the time he was seized."

A day or two afterwards, the following letter appeared in all the newspapers from Mr Hamilton, the Secretary of the Treasury of United States, to the College of Physicians.

"GENTLEMEN,—Motives of humanity and friendship to the citizens of Philadelphia, induce me to address to you this letter, in the hope that it may be in some degree instrumental in diminishing the present prevailing calamity. It is natural to be afflicted not only at the mortality which is said to obtain, but at the consequences of that undue panic which is fast depopulating the city, and suspending business both public and private.

"I have myself been attacked with the reigning putrid fever, and with violence—but I trust that I am now completely out of danger. This I am to attribute, under God, to the skill and care of my friend Doctor Stevens, a gentleman lately from the island of St Croix, one to whose talents I can attest, from an intimate acquaintance began in early youth, whose medical opportunities have been of the best, and who has had the advantage of much experience both in Europe (having been in Edinburgh some years since, when the same fever raged there) and in the West Indies, where it is frequent. His mode of treating the disorder varies essentially from that which has been generally practised—And I am persuaded, where pursued, reduces it to one of little more than ordinary hazard.

"I know him so well, that I entertain no doubt that he will freely impart his ideas to you, collectively or individually; and being in my own person a witness to the efficacy of his plan, I venture to believe, that,

if adopted, and if the courage of the citizens can be roused, many lives will be saved, and much ill prevented. I may add, that as far as can be yet pronounced, its efficacy has been alike proved on Mrs Hamilton, who is now in the disorder, contracted from me, with every favourable appearance.

" In giving you this information, Gentlemen, I have done what I thought discharging a duty. I only add, that if any conference with Dr Stevens is desired, that he is going to-morrow to New York, from which journey he has been detained several days on my account.

I am, Gentlemen, with respect,  
Your obedient servant,

September, 11.

A. HAMILTON."

" He lodges at Mrs William's, corner of Spruce and Third streets.

" *College of Physicians.*"

This letter was followed by a letter from Dr Stephens to Dr Redman the president of the College of Physicians, which was published in the Federal Gazette of the 16th of September.

" SIR,—In compliance with the request of the learned body over whom you preside, I now cheerfully transmit them a few brief and detached observations on the nature and treatment of the present malignant and fatal disorder which prevails in this city. Their humane anxiety to ascertain the real character of the complaint, and to establish some fixed and steady mode of cure for it, are fresh proofs of their benevolence, and clearly evinces that disinterested liberality for which they are so eminently distinguished. I only regret that their application to me has approached so near the moment of my departure, that I have not suffi-

cient leisure to elucidate the subject so amply and so satisfactorily as the importance of it deserves. Imperfect, however, as the enclosed sketch may be, I can with truth assure them, that it is the result of extensive experience, and accurate observation; and that it is dictated solely by a philanthropic desire of checking the ravages of disease, and of restoring tranquillity to the dejected minds of the public.

" This disorder arises from contagion. Its approaches are slow and insidious at the commencement. It is ushered in with a slight degree of languor and lassitude, loss of appetite, restlessness and disturbed dreams, depression of spirits, and a want of inclination to perform the ordinary occupations of life. The patient does not consider himself sufficiently sick to complain or call in the assistance of a physician. His feelings are rather unpleasant than alarming. This train of symptoms continue for two or three days, and if not removed by timely aid, is succeeded by a sharp pain in the head, anxiety, and suppression about the praecordia, a feeble pulse, great prostration of strength, and a variety of other morbid phenomena, which are too well known to the faculty to need description. In the first stage of the disorder, a little attention, and the well directed efforts of a skilful practitioner, may generally prove successful in mitigating the violence of future symptoms, and preventing either much danger or long confinement.

" At the first appearance of languor, lassitude, &c. especially if the patient has been near the source of contagion, he should carefully avoid all fatigue of body and application of mind. Every thing that can tend to debilitate should be carefully guarded against. He should remain at perfect rest. His diet should be fuller and more cordial than usual, and a few extraordinary glasses of old Madeira may be allowed. He should take the cold bath every morning; and if his sleep is disturbed, a gentle opiate

combined with a few grains of the volatile salts, and some grateful aromatic, may be administered at night. A few dozes of good genuine bark may be taken in powder during the day ; and if the stomach should be affected with nausea, a strong decoction of the same may be substituted. Great care should be taken to keep the mind of the patient calm and serene, —neither to terrify it with needless apprehension, nor alarm it by the melancholy relation of the spreading mortality which surrounds him. It is at this stage of the complaint that the physician may lay the foundation of future success. But unfortunately, it is also the period of the disease which is commonly too much neglected by the patient. Gentlemen of the faculty are rarely called in until the symptoms are more alarming and dangerous. But it is a matter of material consequence to the patient to know that by a little attention at the commencement, and by carefully watching the approaches of the disease, even though it should be contracted, it may be rendered mild, and may terminate favourably. It is also of equal consequence for practitioners, to attend to these particulars in laying down the prophylaxis to their patients.

“ When the disorder has gained ground and become violent, and when the danger is imminent, the most unremitting exertions should be made by the physician to mitigate the symptoms. The nausea and vomiting may be relieved by an infusion of camomile flowers, given frequently until the stomach is sufficiently emptied of all crude matter. Small doses of a cordial mixture, composed of the oil of peppermint and compound spirits of lavender, may then be taken until the fever abates. If, notwithstanding, the irritability of the stomach should still continue, recourse must be instantly had to the cold bath, which must be used every two hours, or oftener, if the urgency of the symptoms should require it. After each immersion, a glass of old Madeira, or a lit-

tle brandy burnt with cinnamon, may be administered. Flannel cloths wrung out of spirits of wine, impregnated with spices, may be applied to the pit of the stomach, and changed frequently.

" An injection, containing an ounce of powdered bark, mixed with thin salap or fago, to which a tea-spoon-full of laudanum has been added, should be administered. These injections may be continued every two or three hours, omitting the laudanum after the first. As soon as the stomach can bear the medicines and nourishment, the bark may be administered in small doses; as much Madeira wine may be given as the patient can bear without affecting his head, or heating him too much. All emetics and violent cathartics should be avoided. If the bowels should not be sufficiently open, a laxative clyster may be necessary, or a few grains of powdered rhubarb added to each dose of bark until the desired effect is produced. If diarrhoea should prevail, it must be checked by starch injections blended with laudanum by the *tinctura E. kino japonica*, or a decoction of carcarilla. All drastic cathartics do injury when the disease is in its advanced stage. If stupor, coma, or delirium should come on, a large blister should be applied between the shoulders, and small ones to the thighs; stimulant cataplasms should also be applied to the soles of the feet: when hemorrhages appear, the elixir of vitriol may be administered in conjunction with the bark, but great care should be taken to prevent it from affecting the bowels.

" If the pulse should be much funk, the prostration of strength great, and subsultus tendinum take place, small doses of the liquor minirallis Hoffmanni, or even vitriolic æther diluted with water, may be given. Musk and camphor, in this stage of the disease, have likewise proved effectual. Upon the whole, Sir, I may sum up this hasty outline, by inculcating the use of the tonic plan in its fullest ex-

tent, and by warning against the ill consequences of debilitating applications, or profuse evacuations, in every period of the disease: the cold bath, bark, and wine, a spacious well ventilated room, frequent change of bed and body linen, and attention to rest and quiet, if properly persevered in, will in most cases prove successful, and strip this formidable disease of its malignity, its terror, and its danger.

" The description I have given of this disorder, and the utility of the plan of cure I have laid down, are confirmed by experience, and coincides with our reason and the soundest theory; the cause producing the effect is a strong debilitating power; the symptoms occasioned by its application, indicate extreme debility in the animal functions, and great derangement of the nervous system: ought not therefore the remedies adapted to this complaint to be cordial, stimulating, and tonic? Should not violent evacuations, which evidently weaken and relax, be avoided? These are hints which it would be presumptuous and assuming in me to extend or dwell upon: to gentlemen of such eminence as your colleagues, it is sufficient to point out what reason and experience conjointly suggest to me. Their superior judgment will, I am convinced, supply every deficiency, and enable them to pursue that plan which is best adapted to public utility, and the effectual removal of the present dreadful malady. If the few observations I have suggested, be serviceable to the inhabitants of this city, my intentions will be fully answered, and my feelings completely gratified.

I have the honour to be, Sir,

Sept. 16th }  
1793. }

Your most obedient servant,

EDWARD STEVENS.

John Redman, M. D. President }  
of the College of Physicians. }

An essay upon the theory of this disease at this juncture, would have been as ill-timed as a discourse upon tactics would be to an army in the height of a battle; but Dr Stevens's publication made it necessary for me to appeal to the *reason* of my brethren upon the theory of the disease. I did it in a few words in the following address to the College of Physicians.

“ GENTLEMEN,—It is with extreme regret that I have read Dr Stevens's letter to the president of our College in one of the newspapers. It will, I fear, co-operate with Dr Kuhn's plan of treating the disorder, and Mr Hamilton's well-meant letter, in adding to the mortality of the disorder. If I should survive my present labours, I hope to prove, that Dr Stevens's theory of the disease in the West Indies, is as erroneous, as the practice he has recommended has been fatal, in Philadelphia. It is a most inflammatory disorder in its first stage. The contagion, it is true, in its first action upon the system, frequently produces debility; but the debility here is of the *indirect* kind, and arises wholly from an excess of the stimulus of contagion upon the system. This indirect debility, as in many other diseases, yields only to the abstraction of other stimuli, and to none so speedily as to large evacuations from the bowels and the blood vessels.

“ I have so high an opinion of Dr Stevens's candour and liberality as a gentleman and a physician, that I shall make no apology for thus publickly dissenting from his opinions and practice.

“ Could patients be visited by physicians as often, and attended by nurses as carefully, as in other acute diseases, I am satisfied that the mode of treating it which I have adopted and recommended, would

soon reduce it in point of danger and mortality, to a level with a common cold.

From, Gentlemen,

Your sincere friend and brother,

Sept. 17th  
1793. }

B. RUSH.

During this controversy with the opinions and practice of Dr Kuhn and Dr Stevens, I published in the Federal Gazette the following letter to the College of Physicians; also some additions to the directions I had published with the mercurial purges.

" GENTLEMEN,—As the weekly meetings of our College have become no longer practicable, I have taken the liberty of communicating to you the result of further observations upon the prevailing epidemic.

" I have found bleeding to be useful, not only in cases where the pulse was full and quick, but where it was *slow* and *tense*. I have bled in one case where the pulse beat only 48 strokes in a minute, and recovered my patient by it. The pulse became more full and more frequent after it. This state of the pulse seems to arise from an inflamed state of the brain, which shows itself in a preternatural dilatation of the pupils of the eyes. It is always unsafe to trust to the most perfect remissions of fever and pain in this state of the pulse. It indicates the necessity of more bleeding and purging. I have found it to occur most frequently in children.

" I have bled twice in many, and in one acute case, four times, with the happiest effects. I consider intrepidity in the use of the lancet at present to be as necessary, as it is in the use of mercury and jalap, in this insidious and ferocious disease.

" I lament the contrariety of opinion among the members of our College, upon the remedies proper in this disease. This contrariety seems to arise from

the yellow fever being confounded with the jail or hospital fever. The fevers of Breslau, Vienna, and Edinburgh, mentioned in some late publications, in which the cold bath was used with so much success, were of the latter kind. The two diseases are totally different from each other in their cause, seasons of prevailing, symptoms, danger, and method of cure.

From, Gentlemen,

Your friend and brother,

Sept. 12th, 1793. §

BENJ. RUSH,"

F E D E R A L G A Z E T T E.

" Dr Rush regrets that he is unable to comply with all the calls of his fellow citizens, who are indisposed with the prevailing fever. He begs leave to recommend to such of them as cannot have the benefit of medical aid, to take the mercurial purges, which may now be had, with suitable directions, at most of the apothecaries, and to lose ten or twelve ounces of blood as soon as is convenient after taking the purges, if the headache and fever continue. Where the purges cannot be obtained, or do not operate speedily, bleeding may now be used before they are taken. The almost universal success with which it hath pleased God to bless the remedies of strong mercurial purges and bleeding, in this disorder, enables Dr Rush to assure his fellow citizens, that there is no more danger to be apprehended from it, when those remedies are used in its early stage, than there is from the measles or the influenza.

" Dr Rush assures his fellow citizens further, that the risk from visiting and attending the sick, in common cases, at present, is not greater than from walking the streets. He hopes this information will be attended to, as many of the sick suffer greatly from the want of the assistance of bleeders, and of the attendance of nurses and friends.

" Whilst the disease was so generally mortal, or the successful mode of treating it only partially adopted, Dr Rush advised his friends to leave the city; at present he conceives this advice to be unnecessary; not only because the disease is now under the power of medicine, but because the citizens who now wish to fly into the country, cannot avoid carrying the infection with them. They had better remain near to medical aid, and avoid exciting the infection into action, which is now in their bodies, by a strict attention to former directions.

" Dr R. does not believe it will be prudent for those persons who are in the country to return to town, until after frost or heavy rains have taken place; both of which alike weaken or destroy the contagion of the yellow fever.

" September 12th 1793."

Having mentioned the conditional use of bark, wine, and laudanum, in my first publication, and finding them not only useless, but hurtful, I published the following address to the citizens of Philadelphia, on the 16th of September. In this address I repeated my advice to live upon a milk and vegetable diet.

" Dr Rush recommends to all such of his fellow citizens as are exposed to the contagion of the prevailing fever, to live upon a milk and vegetable diet, and take cooling purges once or twice a week. The effects of this regimen in rendering the disease mild (where it is taken) are nearly the same as in preparing the body for the small-pox.

" Dr R. advises those persons who cannot obtain the attendance of a physician, by no means to take vomits, bark, wine, or laudanum, during the first three or four days of the disorder. As the disease is highly inflammatory at present in its first stages, the only proper remedies for it are, strong purges,

copious bleeding, if the pulse be *full* or *tense*, or if it be *slower* than natural, and at the same time subject to pauses in its pulsation.

" During this inflammatory state of the disease, the drinks should be simple and cold. No animal food should be tasted; cool air should be admitted into the room, and napkins dipped in pump water, should be applied frequently to the forehead.

" Dr R. recommends further, that the beds and clothes of persons who have had the disease, should, *upon no account*, be exposed to the heat of the sun, but be washed in warm, or soaked in cold water.

It would be an act of great humanity to the city to provide all the physicians and bleeders with horses and chairs, as it will be impossible for them long to escape the disease, while they are so much pre-disposed to it by constant fatigue."

" September 16th 1793."

I shall mention hereafter the substitutes I used for the tonic remedies which I had thus publicly decried.

On the 20th of September, the following publication appeared in the Federal Gazette, subscribed by Dr Currie.

" MR BROWN,—It affords me particular satisfaction, that I now have it in my power to inform my fellow citizens, that the progress of the infectious fever has greatly abated, and that with a little longer perseverance in avoiding intercourse with the infected, as far as humanity will permit, paying at the same time, proper attention to fumigating and ventilating the houses, clothing, and utensils from whence the sick have been removed, or where they have been confined, the infection which has proved so mortal, will most certainly be entirely eradicated in a few days. The best method for effecting this,

is contained in a late publication by the learned Dr Russel.

" I have made the strictest enquiry respecting the number at present confined by the genuine yellow fever, and am convinced that it does not exceed 40 or 50 in the whole city.

" There is, however, another formidable disease prevalent, by which, I have reason to believe, there are above a thousand ill at this time.

" The disease I mean, is the common remittent or fall fever. This fever, however, is not infectious.

" When the remitting fever attacks persons not fully recovered from the effects of the influenza, (which is also still prevalent here) it occasions a violent determination of the blood to the head, accompanied with acute pain, a redness of the eyes, with a faint tinge of yellow—the pulse is quick, and the skin hot. This is the disease which is so much under the power of blood-letting and purging ; and is as different from the infectious, or genuine yellow fever, as the sun is from the moon, or light from darkness.

" In the fall fever, which succeeds the influenza, the eye is sprightly, though red, the face turgid and flushed :—Whereas, in the genuine yellow fever, the eye is dull and inanimate, and suffused with a dusky brown, the face pale, shrunk, and cadaverous, almost from the first attack. It is in the remitting fever, with the violent affection of the head, that the mode of treatment advised by Dr Rush, can only be proper ; and not in the infectious or yellow fever. On the contrary, in the yellow fever, it cannot fail of being certain death. In the yellow fever, the means recommended by Dr Kuhn and Dr Stevens, are the most effectual, and the only ones that can be relied on, with such a variation as circumstances, and the period of the disease, may indicate.

" It is in the fall fever, circumstanced as already described, that there is safety in visiting and attend-

ing the sick, because this fever is not contagious. Can there be the same safety in visiting patients confined with the genuine yellow fever, which made its appearance in Water-street, the third of August last? Let those judge who have had opportunities of seeing its ravages! Is that fever, in which the bond of union is immediately dissolved between the solids and fluids, and where the purple current issues from every pore, the same as that for which Dr Rush directs bleeding and purging? and can there be safety in visiting persons so affected? Have we all got the contagion of the yellow fever in our bodies, only waiting for some exciting cause to put it into action? By no means. The disease, which Dr Rush calls the yellow fever, and of which Dr P. says he has cured such numbers by the *new method*, is only the fall fever, operating on persons who have been previously affected by the influenza.

"It is time the veil should be withdrawn from your eyes, my fellow citizens!"

W.M. CURRIE."

"September 17th 1793.

To this, I published the following answer the next day.

"Dr Rush is extremely sorry to differ from his friend Dr Currie, in his opinion respecting the prevailing epidemic, published in the Federal Gazette of last evening. Dr R. asserts, from the authority of Dr Sydenham, as well as from the observations of three and thirty years upon epidemic diseases, that no two epidemics of *unequal* force can exist long together in the same place; and he is sure, from what he has seen of the present disease, that all the fevers now in the city, are from *one* cause, and that they all require different portions of the same remedies. Dr R. has no other motives for wishing to be believed by his fellow citizens in these assertions, than to

beget a confidence in them, in remedies which he conceives to be as rational, as he knows them to be successful in the prevailing disorder. If Dr Currie will consult Blane, Hume, Lining, and Hillary, upon the subject of the yellow fever, he will find that they all describe it as making its first attack with the symptoms of a bilious remittent. Dr R. perfectly recollects its appearing not only in this form, but in that of an intermittent, in the year 1762..

" Among many arguments which might be adduced to prove that all our present fevers arise from one source, and require the same treatment (varied according to their degrees of violence) Dr R. will mention only one, and that is, he has cured many persons by plentiful purging and bleeding, of the present epidemic, who have lived in families in which persons had died with a black vomiting, and a yellow skin.

" No one can suppose that Dr R's late indisposition (after having been constantly exposed for three weeks, to the contagion of the yellow fever in all its degrees of malignity) was not occasioned by an attack of that disorder, and yet he owes his perfect recovery, through divine goodness, simply to two copious bleedings, and two doses of the mercurial medicine, and that too, in the short term of only two days.

" September 18th 1793."

Besides the publications I have mentioned, Dr Wistar addressed a history of an attack he had of the fever, to the physicians of Philadelphia, in the General Advertiser of the 26th of September. He began it by observing, that " he believed many persons had been supposed to have been cured of the disease, who had never had it," and he concluded without deciding upon any of the remedies which were the subjects of controversy. He added a strong testimony from his own experience, of the efficacy of cool

air in abating the excessive action of the arterial system.

I pass over many anonymous essays upon the fever, which appeared in the newspapers; also several from medical gentlemen who beheld the disease at a distance. They all tended more or less to distract the public mind, and to lessen the confidence of the citizens in the simple and powerful remedies which I had recommended.

In support of the efficacy of these remedies, Dr Porter, Dr Annan, and Dr Mease, gave very decided testimonies in the public papers. I shall insert as an epitome of them all, the following letter from Dr Porter.

“ DEAR SIR,—As I know it will afford you much pleasure, I send you the following statement of cases. Within three days past I have been called to thirty seven persons labouring under the prevailing epidemic. I have treated them all in the new method, with the greatest success; nearly half of them are so far recovered as to require no farther assistance from me. I cannot avoid mentioning one case of a man in whom the advantages of bleeding were remarkable.—The pain in his head was so violent as to lead me to order bleeding previous to purging—from some inaccuracy in the operation, he lost a greater quantity than I directed, his attendants suppose fifteen ounces; the consequence however was, that at my next visit I found that my patient had walked out perfectly recovered. This case was clearly marked with all the symptoms attendant on the disease in its first stages, particularly pain in the head, and redness in the eyes.

With great regard,

I am your

Obedient servant,

JOHN PORTER.”

September 17.

“ Dr Rush.”

The safety of the new remedies (as they were sometimes called) was finally admitted by their greatest enemies, but their *efficacy* was supposed to be confined only to common remittents, to the influenza, or to pleurisies, and other inflammatory fevers ; for those diseases were believed to be constantly present in the city ; and the certificates which were published of large families having been cured of the yellow fever by the new remedies, were discredited, or treated with contempt, because the patients had recovered without a *yellow colour* in their faces.

To refute this error, as well as to shew that I was not singular in my opinions respecting blood-letting, purges, and opium, I published the following extracts from Dr Moseley, in the Federal Gazette of the 11th of October.

" MR BROWN,—A number of the physicians of this city, who suppose that we have two fevers now prevailing among us, have asserted that a yellow colour is essential to what is called the yellow fever. The following extract from Dr Moseley will shew how much they have been mistaken. This judicious physician practised physic many years in Jamaica, and saw the fever which he describes, in all its different forms.

" I have used (says the Doctor) the word *yellow* in compliance with custom ; but I even distrust that name, as the *inexperienced* may be looking out for that appearance, and not find, until it is *too late*, the disease he has to contend with. And indeed, the yellowness of the skin, like the black vomiting, is not an invariable symptom of this fever. Those who are *fortunate enough* to recover, seldom have it ; and many die without its appearance. Besides, the yellowness alone leads to nothing certain ; it may arise from an inoffensive suffusion of bile." p. 411—second edition.

The present epidemic has likewise been called a putrid fever, and the remedies for the cure of that species of fever have been very generally prescribed. The following extract from the same author will show the error and mischief of that opinion and practice :

" This disease is, in the highest degree possible, an inflammatory one, accompanied with such symptoms, in a greater extent, as attend all inflammatory fevers, and most strikingly the reverse of any disease that is putrid, or of one *continued exacerbation*. It attacks all such people and under such circumstances as are seldom the objects of putrid diseases." p. 412.

" In another place he says, " Bleeding must be performed, and repeated every six or eight hours, or whenever the exacerbations come on, while the heat, fullness of pulse, and pains continue ; and if these symptoms be violent and obstinate, and do not abate during the first 36 or 48 hours of the fever, bleeding should be executed even to fainting. Taking away only six or eight ounces of blood because the patient may be faint, which is a symptom of the disease, is doing nothing towards the cure. Where bleeding is improper, no blood should be taken away ; where it is proper, that quantity will not relieve, and it is losing that time, which can never be regained." p. 427—428.

" On PURGES, the doctor makes the following remarks.

" When a sufficient quantity of blood has been taken away, (which is *never* done) let the patient's habit be what it may, while the heat, reiterated exacerbations, flushings in the face, thirst, pains in the head, and burning in the eyes remain, the next step is to evacuate the contents of the bowels, and turn the humours downwards." p. 435.

" Speaking of opium, the doctor says, " In a fever so highly inflammatory, where the contents of the

whole alimentary canal are so hot and acrid, opium must be a fatal medicine." p. 459.

" To these quotations I shall only add, that the disease, from the influence of the cool weather is probably more universally, and more highly inflammatory, in our city, and requires more copious evacuations than in the Island of Jamaica. It certainly requires more speedy and more plentiful bleeding than a common pleurisy, inasmuch as the blood-vessels, rendered weak by the previous hot summer, are in more danger of being ruptured both externally and internally, from the violent stimulus of the contagion, than in an inflammatory fever, which succeeds cold weather.

BENJ. RUSH."

" October 9. 1793."

In justice to Dr Currie, I take great pleasure in inserting the following short address to the citizens, in which he retracts the opinion he had given to the public in the Federal Gazette of the 20th of September.

" October 2d, 1793.

" All the physicians engaged in practice at present in the city, agree with Dr Rush that blood-letting and copious purging are requisite in the cure of the prevailing epidemic, in every case, where inflammatory symptoms are evident, and that the dispute hitherto has been about the name of the disease, rather than the proper mode of treatment.

W. CURRIE."

The conclusion of the above address was unfortunately erroneous. The dispute between the physicians turned upon more interesting points than the name of the disease, as must be very obvious from the perusal of the preceding pages.

I have suppressed a letter to Dr John Rodgers of New York, dated the third of October, containing a short history of the treatment of the disease, only because it will be detailed more fully in this work. That publication was intended as an answer to many letters which I received from practitioners in the country, requesting an account of my mode of treating the disorder. I have likewise suppressed a second letter to Dr Rodgers, containing some extracts from Dr Sydenham, which were intended to establish the exclusive influence of powerful epidemics over inferior febrile diseases. This subject has been discussed in a more ample manner in the history of the fever.

From the different publications which I have inserted, it appears that there were two modes of practice pursued; the one dictated by an opinion that the disease was highly putrid, and the other, that it was of a highly inflammatory nature. But besides these, there were two other modes of treating the disease, the one by *moderate* purging with calomel only, and moderate bleeding, on the first or second day of the fever, and afterwards by the copious use of bark, wine, laudanum, and aromatic tonics. This practice was supported by an opinion, that the fever was inflammatory in its first, and putrid in its second stage; the other mode referred to, was peculiar to the French physicians, several of whom had arrived in the city from the West Indies, just before the disorder made its appearance. Their remedies were various. Some of them prescribed nitre, tremor tar-tar, camphor, centaury tea, the warm bath, glysters, and moderate bleeding, while a few used lenient purges, and large quantities of tamarind water, and other diluting drinks. The dissensions of the American physicians threw a great number of patients into the hands of these French physicians. They were, moreover, supposed to be better acquainted with the disease than the physicians of the city, most of whom it was well known had never seen it before.

I shall hereafter inquire into the relative success of each of the four modes of practice which have been mentioned.

Having delivered a general account of the remedies which I used in this disorder, I shall now proceed to make a few remarks upon each of them. I shall afterwards mention the effects of the remedies used by other physicians.

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### O F P U R G I N G.

I have already mentioned my reasons for promoting this evacuation, and the medicine I preferred for that purpose. It had many advantages over any other purge. It was detergent to the bile and mucus which lined the bowels. It probably acted in a peculiar manner upon the biliary ducts, and it was rapid in its operation. One dose was sometimes sufficient to open the bowels; but from two to six doses were often necessary for that purpose; more especially, as part of them was frequently rejected by the stomach. I did not observe any inconvenience from the vomiting which was excited by the jalap. It was always without that straining which is produced by emetics; and it served to discharge bile when it was lodged in the stomach. I did not rest the discharge of the contents of the bowels on the issue of one cleansing on the first day. There is, in all bilious fevers, a reproduction of morbid bile as fast as it is discharged. I therefore gave a purge every day while the fever continued. I used castor oil, salts, tremor tartar, and rhubarb, (after the mercurial purges had performed their office) according

to the inclinations of my patients, in all those cases where the bowels were easily moved ; but where this was not the case, I gave a single dose of calomel and jalap every day. Strong as this purge may be supposed to be, it was often ineffectual ; more especially after the 20th of September, when the bowels became more obstinately constipated. To supply the place of the jalap, I now added gamboge to the calomel. Two grains and an half of each made into a pill, were given to an adult every six hours until they procured four or five stools. I had other designs in giving a purge every day, besides discharging the re-accumulated bile. I had observed the fever to fall with its principal force upon such parts of the body as had been previously weakened by any former disease. By creating an artificial weak part in the bowels, I diverted the force of the fever to them, and thereby saved the liver and brain from fatal or dangerous congestions. The practice was further justified by the beneficial effects of a plentiful spontaneous diarrhoea in the beginning of the \* disorder ; by hemorrhagies from the bowels, when they occurred from no other parts of the body, and by the difficulty or impracticability of reducing the system by means of plentiful sweats. The purges seldom answered the intentions for which they were given, unless they produced four or five stools a-day. As the fever shewed no regard to day or night in the hours of its exacerbations, it became necessary to observe the same disregard to time in the exhibition of purges ; I therefore prescribed them in the evening at all times when the patient had passed a day with-

\* In some short manuscript notes upon Dr Mitchell's account of the yellow fever in Virginia, in the year 1741, made by the late Dr Kearsley, Sen. of this city, he remarks, that in the yellow fever which prevailed in the same year in Philadelphia, "some recovereded by an early discharge of black matter by stool." This gentleman, Dr Redman informed me, introduced purging with Glauber salts, in the yellow fever in our city. He was preceptor to Dr Redman in medicine.

out two or three plentiful stools. When purges were rejected, or slow in their operation, I always directed opening glysters to be given every two hours. The effects of purging were as follow :

1. It raised the pulse when low, and reduced it when it was preternaturally tense or full.
2. It revived and strengthened the patient. This was evident in many cases, in the facility with which patients who had staggered to a close-stool, walked back again to their beds, after a copious evacuation. Dr Sydenham takes notice of a similar encrease of strength after a plentiful sweat in the plague. They both acted by abstracting excess of stimulus, and thereby removing indirect debility.
3. It abated the paroxism of the fever. Hence arose the advantage of giving a purge in some cases in the evening, when an attack of the fever was expected in the course of the night.
4. It frequently produced sweats, when given on the first or second day of the fever, after the most powerful sudorifics had been taken to no purpose.
5. It sometimes checked that vomiting which occurs in the beginning of the disorder ; and it always assisted in preventing the more alarming occurrence of that symptom, about the 4th or 5th day.
6. It removed obstructions in the lymphatic system. I ascribe it wholly to the action of mercury, that in no instance did any of the glandular swellings, which I formerly mentioned, terminate in a suppuration.
7. By discharging the bile through the bowels as soon and as fast as it was secreted, it prevented, in most cases, a yellowness of the skin.

However salutary the mercurial purge was, objections were made to it by many of our physicians; and prejudices, equally weak and ill-founded, were excited against it. I shall enumerate and answer those objections.

1. It was said to be of too drastic a nature. It was compared to arsenic; and it was called a dose for a horse. This objection was without foundation. Hundreds who took it, declared they had never taken so mild a purge. I met with but one case in which it produced bloody stools; but I saw the same effect from a dose of salts. It sometimes, it is true, operated from twenty to thirty times in the course of twenty-four hours; but I heard of an equal number of stools, in two cases, from salts and tremor tartar. It is not an easy thing to affect life, or even subsequent health, by copious or frequent purging. Dr Kirkland mentions a remarkable case of a gentleman who was cured of a rheumatism by a purge, which gave him between 40 and 50 stools. This patient had been previously affected by his disorder 16 or 18 weeks.\* Dr Moseley not only proves the safety, but establishes the efficacy of numerous and copious stools in the yellow fever. Dr Say probably owes his life to three-and-twenty-stools procured by a dose of calomel and gamboge, taken by my advice. Dr Redman was purged until he fainted, by a dose of the same medicine. This venerable gentleman, in whom 70 years had not abated the ardour of humanity, nor produced obstinacy of opinion, came forward from his retirement, and boldly adopted the remedies of purging and bleeding, with success, in several families, before he was attacked by the disease. His recovery was as rapid, as the medicine he had used was active in its operation. Besides

\* Treatise on the Inflammatory Rheumatism, Vol. I. p. 407.

taking the above purge, he lost twenty ounces of blood by two bleedings \*

But who can suppose that a dozen or twenty stools in a day could endanger life, that has seen a diarrhoea continue for several months, attended with fifteen or twenty stools every day, without making even a material breach in the constitution? Hence Dr Hillary has justly remarked, that "it rarely or never happens that the purging in this disease, though violent, takes the patient off, but the fever and inflammation of the bowels."† Dr Clark in like manner remarks, that evacuations do not destroy life in the dysentery, but the fever with the emaciation or mortification which attend and follow the disease.‡

2. A second objection to this mercurial purge was, that it excited a salivation, and sometimes loosened the teeth. I met with but two cases in which there was a loss of teeth from the use of this medicine, and in both, the teeth were previously loose or decayed. The salivation was a trifling evil, compared with the benefit which was derived from it. I lost only one patient in whom it occurred. I was taught,

\* Dr Redman was not the only instance furnished by the disorder, in which *reason* got the better of the habits of old age, and of the formalities of medicine. About the time the fever declined, I received a letter from Dr Shippen, Sen. (then above 82 years of age) dated Oxford Furnace, New Jersey, October 13th, 1793, in which, after approving in polite terms of my mode of practice, he adds, "Desperate diseases require desperate remedies. I would only propose some small addition to your present method. Suppose you should substitute, in the room of the jalap, *six* grains of gamboge, to be mixed with 10 or 15 grains of calomel; and after a dose or two as occasion may require, you should bleed your patients *almost* to death, at least to fainting; and then direct a plentiful supply of mallows tea, with fresh lemon juice, and sugar and barley water, together with the most simple, *mild*, and nutritious food." The doctor concludes his letter by recommending to my perusal Dr Dover's account of nearly a whole ship's crew having been cured of a yellow fever, on the coast of South America, by being bled until they fainted.

† Diseases of Barbadoes, p. 212.

‡ Diseases in Voyages to Hot Climates, Vol. II. p. 322.

by this accidental effect of mercury, to administer it with other views, than merely to cleanse the bowels, and with a success which added much to my confidence in the power of medicine over this disease. I shall mention those views under another head.

3. It was said that the mercurial purge excoriated the rectum, and produced the symptoms of pain and inflammation in that part, which were formerly mentioned.

To refute this charge, it will be sufficient to remark, that the bile produces the same excoriation and pain in the rectum, in the bilious and yellow fever, where no mercury has been given to discharge it. In the bilious remitting fever which prevailed in Philadelphia in 1780, we find the bile which was discharged by "gentle doses of salts, and cream of tartar, or the butternut pill, was so acrid as to excoriate the rectum, and so offensive as to occasion, in some cases, sickness and faintness, both in the patients and in their attendants."\*

Dr Hume says further upon this subject, that the rectum was so much excoriated by the natural discharge of bile in the yellow fever, as to render it impossible to introduce a glyster-pipe into it.

4. It was objected to this purge, that it inflamed, and lacerated the stomach and bowels. In support of this calumny, the inflamed and mortified appearances which those viscera exhibited upon dissection, in a patient who died at the hospital at Bushhill, were spoken of with horror in some parts of the city. To refute this objection, it will only be necessary to review the account formerly given of the state of the stomach and bowels after death from the yellow fever, in cases in which no mercury had been

\* Medical Inquiries and Observations, London edition, vol. I. p. 120.

given. I have before taken notice that Sir John Pringle, and Dr Cleghorn, had prescribed mercurial purges with success in the dysentery, a disease in which the bowels are affected with more irritation and inflammation than in the yellow fever. Dr Clark informs us that he had adopted this practice. I shall insert the eulogium of this excellent physician, upon the use of mercury in the dysentery in his own words. "For several years past, when the dysentery has resisted the common mode of practice, I have administered mercury with the greatest success; and am thoroughly persuaded that it is possessed of powers to *remove inflammation* and *ulceration* of the intestines, which are the chief causes of death, in this distemper\*."

5. It was urged against this powerful and efficacious medicine, that it was prescribed indiscriminately in all cases; and that it did harm in all weak habits. To this I answer, that there was no person so weak by constitution, or a previous disease, as to be injured by a single dose of this medicine. Mrs Meredith, the wife of the Treasurer of the United States, a lady of uncommon delicacy of constitution, took two doses of the powder in the course of twelve hours, not only without any inconvenience, but with an evident increase of strength soon afterwards. Many similar cases might be mentioned. Even children took two or three doses of it with perfect safety. This will not surprise those physicians who have been in the practice of giving from ten to twenty grains of mercury, with an equal quantity of jalap, as a worm purge, and from fifty to an hundred grains of calomel, in the course of four or five days, in the internal dropsy of the brain. But I am happy in being able to add further, that many women took it in every stage of pregnancy without suffering

\* Vol. II. p. 342.

the least inconvenience from it. Out of a great number of pregnant women whom I attended in this fever, I did not lose one to whom I gave this medicine, nor did any of them suffer an abortion. One of them had twice miscarried in the course of the two or three last years of her life. She bore a healthy child three months after her recovery from the yellow fever.

No one has ever objected to the *indiscriminate* mode of preparing the body for the small-pox by purging medicines. The *uniform* inflammatory diathesis of that disease, justifies the practice, in a certain degree, in all habits. The yellow fever admits of a sameness of cure much more than the small-pox, for it is *more* uniformly and more highly inflammatory. An observation of Dr Sydenham, upon epidemics applies in its utmost extent to our late fever. "Now it must be observed (says this most acute Physician) that some epidemic diseases, in some years are uniformly and constantly the same\*." However diversified our fever was in some of its symptoms, it was in all cases accompanied by more or less inflammatory diathesis, and by a morbid state of the alimentary canal.

Much has been said of the bad effects of this purge, from its having been put up carelessly by the apothecaries, or from its having been taken contrary to the printed directions, by many people. If it did harm in any one case (which I do not believe) from the former of the above causes, the fault is not mine. Twenty men, employed constantly in putting up this medicine, would not have been sufficient to have complied with all the demands which were made of me for it. Hundreds who were in health, called or sent for it as well as the sick, in order to have it in readiness in case they should be surprised by the disorder in the night, or at a distance from a physician.

\* Vol. I. p. 9.

In all the cases in which this purge was supposed to have been hurtful, when given on the first or second day of the disorder, I believe it was because it was not followed by repeated doses of the same, or of some other purge ; or because it was not aided by blood-letting. I am led to make this assertion, not only from the authority of Dr Sydenham, who often mentions the good effects of bleeding in moderating or checking a diarrhoea ; but by having heard no complaints of patients being purged to death by this medicine, after blood-letting was universally adopted by all the physicians in the city.

It was remarkable that the demand for this purging powder continued to encrease under all opposition, and that the sale of it by the apothecaries was greatest towards the close of the disease. I shall hereafter say, that this was not the case with the West India remedies.

It is possible that this purge sometimes proved hurtful when it was given after the 5th day of the disorder, but it was seldom given for the *first* time after the third day, and when it was, the patient was generally in such a situation that nothing did him either good or harm.

I derived great pleasure from hearing, after the fever had left the city, that calomel had been given with success as a purge in bilious fevers in other parts of the Union besides Philadelphia. Dr Lawrence informed me that he had cured many patients by it, of the yellow fever which prevailed in New York in the year 1791, and the New York papers have told us that several practitioners had been in the habit of giving it in the autumnal fevers, with great success, in the Western parts of that state. They had probably learned the use of it from Dr Young, who formerly practised in that part of the United States, and who lost no opportunity of making its praises public, wherever he went.

My pupil, Mr Potter, gave calomel and jalap in large doses, with great success in the bilious fever of Caroline county in Maryland, before he knew that I had adopted that purge in the cure of our epidemic. He had heard the history of its origin and use from me, some months before, in a conversation upon bilious fevers in my shop.

I have only to add to my account of that purging medicine, that under an expectation, that the yellow fever would mingle some of its bilious symptoms, with the common inflammatory fevers of the winter, and first spring months, I gave that purge in the form of pills in every case of inflammatory fever to which I was called. The fatal issue of several fevers in this city, during the winter, in which this precaution had been neglected, satisfied me that my practice was proper and useful. It is to be lamented, that all new remedies are forced to pass through a fiery ordeal. Opium and bark were long the objects of terror and invective in the schools of medicine. They were administered only by physicians for many years, and that too with all the solemnity of a religious ceremony. This superstition with respect to those medicines, has at last passed away. It will I hope soon be succeeded by a time when the prejudices against *ten and ten*, or *ten and fifteen*, will sleep with the vulgar fears which were formerly entertained of the bark producing diseases and death, years after it had been taken, by "lying in the bones."

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## OF BLOOD-LETTING.

THE theory of this fever, which led me to administer purges, determined me to use blood-letting, as soon as it should be indicated. I am disposed to believe, that I was tardy in the use of this remedy,

and I shall long regret the loss of three patients, who might probably have been saved by it. I cannot blame myself for not having used it earlier, for the immense number of patients which poured in upon me, in the first week of September, prevented my attending so much to each of them, as was necessary to determine upon the propriety of this evacuation. I was in the situation of a surgeon in a battle, who runs to every call, and only stays long enough with each soldier to stop the bleeding of his wound, while the encrease of the wounded, and the unexpected length of the battle, leave his original patients to suffer from the want of more suitable dressings. The reasons which determined me to bleed were :

1. The state of the pulse, which became more tense, in proportion as the weather became cool.
2. The appearance of a moist and *white* tongue on the first day of the disorder ; a certain sign of an inflammatory fever !
3. The frequency of hemorrhagies from every part of the body, and the perfect relief given in some cases, by them.
4. The symptoms of congestion in the brain, resembling those which occur in the first stage of hydrocephalus internus, a disease in which I had lately used bleeding with success.
5. The character of the diseases which had preceded the yellow fever. They were all more or less inflammatory. Even the scarlatina anginosa had partaken so much of that diathesis, as to require one bleeding to subdue it.
6. The warm and dry weather which had likewise preceded the fever. Dr Sydenham attributes a high-

ly inflammatory state of the small-pox to a previous-  
ly hot and dry summer; and I have since observed,  
that Dr Hillary takes notice of inflammatory fevers  
having frequently succeeded hot and dry weather in  
Barbadoes\*. He informs us further, that the yellow  
fever is always most acute and inflammatory, after  
a very hot season.†

7. The authority of Dr Moseley had great weight  
with me in advising the loss of blood, more especially  
as his ideas, of the highly inflammatory nature of  
the fever, accorded so perfectly with my own.

8. I was induced to prescribe blood-letting by re-  
collecting its good effects in Mrs Palmer's son,  
whom I bled on the 20th of August; and who ap-  
peared to have been recovered by it.

Having begun to bleed, I was encouraged to con-  
tinue it by the appearance of the blood, and by the  
obvious and very great relief my patients derived  
from it.

The following is a short account of the appearan-  
ces of the blood drawn from a vein in this disorder.

1. It was, in the greatest number of cases, dense,  
and of a scarlet colour, without any separation into  
crassamentum and serum.

2. There was in many cases a separation of the  
blood into crassamentum and *yellow* serum.

3. There were a few cases in which this separa-  
tion took place, and the serum was of a *natural* co-  
lour.

4. There were many cases in which the blood was  
as fizzy as in pneumonia and rheumatism.

\* Diseases of Barbadoes, p. 16, 43, 46, 48, 52, 122.

† P. 147.

5. The blood was in some instances covered above with a blue pellicle of visy lymph, while the part which lay in the bottom of the bowl was dissolved. The lymph was in two cases mixed with green streaks.

6. It was in a few instances of a dark colour, and as fluid as molasses. I saw this kind of blood in a man who walked about his house during the whole of his sickness, and who finally recovered. Both this, and the 5th kind of blood which has been mentioned, occurred chiefly where bleeding had been omitted altogether, or used too sparingly in the beginning of the disorder.

7. In some patients, the blood, in the course of the disease, exhibited nearly *all* the appearances which have been mentioned. They were varied by the time in which the blood was drawn, and by the nature and force of the remedies which had been used in the disorder.

The effects of blood-letting upon the system were as follow :

1. It raised the pulse when depressed, and quickened it, when it was naturally slow, or subject to intermissions.

2. It reduced its force and frequency.

3. It checked, in many cases, the vomiting which occurred in the beginning of the disorder, and thereby enabled the stomach to retain the purging medicine. It likewise assisted the purge in preventing the dangerous or fatal vomiting which came on about the 5th day.

4. It lessened the difficulty of opening the bowels. Upon this account, in my publication of the 12th of

September, I advised bleeding to be used *before*, as well as after taking the mercurial purge. Dr Woodhouse informed me that he had several times seen patients call for the close-stool while the blood was flowing from the vein.

5. It removed delirium, coma, and obstinate wakefulness. It also prevented or checked hemorrhagies; hence perhaps another reason why not a single instance of abortion occurred in such of my female patients as were pregnant.

6. It disposed in some cases to a gentle perspiration.

7. It lessened the sensible debility of the system, hence patients frequently rose from their beds, and walked across their rooms, in a few hours after the operation had been performed.

8. The redness of the eyes frequently disappeared in a few hours after bleeding. Mr Coxe observed a dilated pupil to contract to its natural size, within a few minutes after he had bound up the arm of his patient. I remarked, in the former part of this work, that blindness in many instances attended or followed this fever. Only two such cases occurred among my patients. In one of them it was of short continuance, and in the other it was probably occasioned by the want of sufficient bleeding. In every case of blindness that came to my knowledge, bleeding had been omitted, or used only in a very moderate degree.

9. It eased *pain*. Thousands can testify this effect of blood-letting. Many of my patients, whom I bled with my own hand, acknowledged to me, while the blood was flowing, that they were better; and some of them declared, that all their pains had left them, before I had completely bound up their arms.

10. But blood-letting had in many cases an effect the opposite of *easing* pain. It frequently increased it in every part of the body, more especially in the head. It appeared to be the effect of the system rising suddenly from a state of indirect debility, and of an increased action of the blood-vessels which took place in consequence of it. I have frequently seen complaints of the breast, and of the head, made worse by a single bleeding, and from the same cause. It was in some cases an unfortunate event in the yellow fever, for it prevented the blood-letting being repeated, by exciting or strengthening the prejudice of patients and physicians against it. In some instances, the patients grew worse after a second, and in one, after a third bleeding. This was the case in Miss Redman. Her pains increased after three bleedings, but yielded to the fourth. Her father Dr Redman concurred in this seemingly absurd practice. It was at this time my old master reminded me of Dr Sydenham's remark, that moderate bleeding did harm in the plague, where copious bleeding was indicated; and that in the cure of that disorder, we should leave nature wholly to herself, or to take the cure altogether out of her hands. The truth of this observation was very obvious. By taking away as much blood as restored the blood-vessels to a morbid degree of action, without reducing this action afterwards, pain, congestion, and inflammation, were frequently increased, all of which were prevented, or occurred in a less degree, when the system rose gradually from the state of depression which had been induced by indirect debility. Under the influence of the facts and reasonings which have been mentioned, I bore the same testimony, in acute cases, against what was called *moderate* bleeding, that I did against bark, wine, and laudanum in this fever.

11. Blood letting, when used *early* on the first day, frequently strangled the disease in its birth, and generally rendered it more light, and the convalescence more speedy and perfect. I am not sure that it ever shortened the duration of the fever, where it was not used within a few hours of the time of its attack. Under every mode of treatment, it seemed disposed, after it was completely formed, to run its course. I was so satisfied of this peculiarity in the fever, that I ventured in some cases to predict the day on which it would terminate, notwithstanding I took the cure entirely out of the hands of nature. I did not lose a patient on the third, whom I bled on the first, or second day of the disorder.

12. In those cases which ended fatally, blood-letting restored, or preserved the use of reason, rendered death easy, and retarded the putrefaction of the body after death.

I shall now mention some of the circumstances which directed and regulated the use of this remedy.

1. Where bleeding had been omitted, for three days, in acute cases, it was seldom useful. Where purging had been used, it was sometimes successful. I recovered two patients who had taken the mercurial purges, whom I bled for the first time on the 7th day. One of them was the daughter of Mr James Cresson, the other was a journeyman ship-carpenter at Kensington. In those cases where bleeding had been used on the first day, it was both safe and useful to repeat it every day afterwards, during the continuance of the fever.

2. I preferred bleeding in the exacerbation of the fever. The remedy here was applied when the disease was in its greatest force. A single paroxism was like a sudden squall to the system, and unless abated by bleeding, or purging, produced universal

disorganization. I preferred the former to the latter remedy, in cases of great danger, because it was more speedy, and more certain in its operation.

3. I bled in several instances in the remission of the fever, where the pulse was tense or charded. It lessened the violence of the succeeding paroxism.

4. I bled in all those cases in which the pulse was preternaturally slow, provided it was tense. Mr Benj. W. Morris, Mr Thomas Wharton, Jun. and Mr Wm. Samson, all owe their lives probably to their having been bled in the above state of the pulse. I was led to use bleeding in this state of the pulse, not only by the theory of the disease which I had adopted, but by the success which had often attended this remedy, in a slow and depressed state of the pulse, in apoplexy and pneumonia. I had, moreover, the authority of Dr Moseley in its favour, in the yellow fever, and of Dr Sydenham, in his account of a new fever, which appeared in the year 1685. The words of the latter physician are so opposite to the cases which have been mentioned, that I hope I shall be excused for inserting them in this place. "All the symptoms of weakness (says our author) proceed from nature's being in a manner oppressed, and overcome by the first attack of the disease, so as not to be able to raise regular symptoms adequate to the violence of the fever. I remember to have met with a remarkable instance of this several years ago, in a young man I then attended; for though he seemed in a manner expiring, yet the outward parts felt so cool, that I could not persuade the attendants he had a fever, which could not disengage, and shew itself clearly, because the vessels were so full as to obstruct the motion of the blood. However, I said, that they would soon find the fever rise high enough upon bleeding him. Accordingly, after taking away a large quantity of blood, as violent a fever appeared

as ever I met with, and did not go off till bleeding had been used three or four times\*."

5. I bled in those cases in which the fever appeared in a tertian form, provided the pulse was full and tense. I well recollect the surprise with which Mr Van Berkel heard this prescription from me, at a time when he was able to walk and ride out on the intermediate days of a tertian fever. The event which followed this prescription, shewed that it was not disproportioned to the violence of his disease; for it soon put on such acute and inflammatory symptoms, as to require six subsequent bleedings to subdue it.

6. I bled in those cases where patients were able to walk about, provided the pulse was the same as has been mentioned under the 4th head. I was determined as to the propriety of bleeding in these two supposed mild forms of the fever, by having observed each of them, when left to themselves, frequently to terminate in death.

7. I paid no regard to the dissolved state of the blood, when it appeared on the first or second day of the disorder, but repeated the bleedings afterwards in every case, where the pulse continued to indicate it. It was common to see fizy blood succeed that which was dissolved. This occurred in Mr Josiah Coates, and Mr Samuel Powel. Had I believed that this dissolved state of the blood arose from its putrefaction, I should have laid aside my lancet as soon as I saw it; but I had long ago parted with all ideas of putrefaction in bilious fevers. The reputation of this doctrine, was the object of one of my papers in the Medical Society of Edinburgh, in the year 1767. The dissolved appearance of the

\* VOL. II. p 351.

blood, I suppose to be the effect of a certain action of the blood-vessels upon it. It occurs in fevers in which no putrid, or foreign matter, has been introduced into the system. The typhoid pneumonia, described by Dr Huxham in his epidemics, and well known in the southern states of America, in the spring of the year, has never been ascribed to any other remote cause, than the sensible qualities of the air.

8. The presence of petechiæ did not deter me from repeating blood-letting, where the pulse retained its fulness or tension. I prescribed it with success in the cases of Dr Mease, and of Mrs Gebler, in Dock-street, in each of whom petechiæ had appeared. Bleeding was equally effectual in the case of the Rev. Mr Keating, at a time when his arms were spotted with that species of eruptions which I have compared to moscheto-bites. I had precedents in Dr De Haen\*, and Dr Sydenham † in favour of this practice. So far from viewing these eruptions as signs of putrefaction, I considered them as marks of the highest possible inflammatory diathesis. They disappeared in each of the above cases after bleeding.

9. In determining the quantity of blood to be drawn, I was governed by the state of the pulse, and by the temperature of the weather. In the beginning of September, I found one or two moderate bleedings sufficient to subdue the fever; but in proportion as the system rose by the diminution of the stimulus of heat, and the fever put on more *visible* signs of inflammatory diathesis, more frequent bleedings became necessary. I bled many patients twice, and a few three times a day. I preferred frequent and small, to large bleedings, in the beginning of September; but towards the height and close of the e-

\* Ratio medendi, VOL. II. p. 162. VOL. IV. p. 172.

† VOL. I. p. 210, and 264.

pidemic, I saw no inconvenience from the loss of a pint, and even twenty ounces of blood at a time. I drew from many persons seventy and eighty ounces in five days; and from a few, a much larger quantity. Mr Gribble, cedar-cooper, in Front-street, lost by ten bleedings an hundred ounces of blood; Mr George, a carter in Ninth-street, lost about the same quantity by five bleedings; and Mr Peter Meirken, one hundred and fourteen ounces in five days. In the last of the above persons the quantity taken was determined by weight. Mr Toy, blacksmith near Dock-street, was eight times bled in the course of seven days. The quantity taken from him was about an hundred ounces. The blood in all these cases was dense, and in the last very fizzy. They were all attended in the month of October, and chiefly by my pupil Mr Fisher; and they are all this day living, and healthy instances of the efficacy of copious blood-letting, and of the intrepidity and judgment of their young physician. Children, and even old people, bore the loss of much more blood in this fever, than in common inflammatory fevers. I took above thirty ounces, in five bleedings, from a daughter of Mr Robert Bridges, who was then in the 9th year of her age. Even great debility, whether natural or brought on by previous diseases, did not in those few cases in which it yielded to the fever, deprive it of the uniformity of its inflammatory character. The following letter from my friend Dr Griffitts, written soon after his recovery from a third attack of the fever, and just before he went into the country for the re-establishment of his health, will furnish a striking illustration of the the truth of the above observation.

“ I CANNOT leave town without a parting adieu to my kind friend, and sincere prayers for his preservation.

“ I am sorry to find that the use of the lancet is still so much dreaded by too many of our physicians;

and, while lamenting the death of a valuable friend this morning, I was told that he was bled but *once* during his disorder. Now if my poor frame, reduced by previous sickness, great anxiety, and fatigue, and a very low diet, could bear *seven* bleedings in five days, besides purging, and no diet but toast and water, what shall we say of physicians who bleed but once?"

" October 19th, 1793."

I have compared a paroxysm of this fever to a sudden squall; but the disease in its whole course was like a tedious equinoctial gale, acting upon a ship at sea; its destructive force was only to be opposed by hauling every sail, and leaving the system to float, as it were, under bare poles. Such was the fragility (if I may be allowed the expression) of the blood-vessels, that it was necessary to unload them of their contents, in order to prevent the system sinking, from hemorrhagies, or from effusions in the viscera, particularly the brain.

q. Such was the indomitable nature of the pulse in some patients, that it did not lose its force after numerous and copious bleedings. In all such cases, I considered the diminution of its frequency, and the absence of a vomiting, as signals to lay aside the lancet. The continuance of this preternatural force in the pulse, appeared to be owing to the contagion, which was universally diffused in the air, acting upon the arterial system in the same manner that it did in persons who were in apparent good health.

Thus have I mentioned the principal circumstances which were connected with blood-letting, in the cure of the yellow fever. I shall now consider the objections that were made to it at the time, and since the prevalence of the fever.

It was said that the bleeding was unnecessarily copious; and that many had been destroyed by it. To

this I answer, that I did not lose a single patient whom I bled seven times, or more, in this fever. As a further proof that I did not draw an ounce of blood too much, it will only be necessary to add, that hemorrhagies frequently occurred after a third, a fourth, and in one instance (in the only son of Mr William Hall) after a sixth bleeding had been used; and further, that not a single death occurred from natural hemorrhagies in the first stage of the disorder. A woman who had been bled by my advice, awoke the night following in a bath of her blood, which had flowed from the orifice in her arm. The next day she was free from pain and fever. There were many recoveries in the city from similar accidents. There were likewise some recoveries from copious natural hemorrhagies in the more advanced stages of the disorder, particularly when they occurred from the stomach and bowels. I left a servant maid of Mrs Morris's, in Walnut-street, who had discharged at least four pounds of blood from her stomach, without a pulse, and with scarcely a symptom that encouraged a hope of her life; but the next day I had the pleasure of finding her out of danger.

It is remarkable that fainting was much less common after bleeding in this fever, than in common inflammatory fevers. This circumstance was observed by Dr Griffitts, as well as myself. It has since been confirmed to me by three of the principal bleeders in the city, who performed the operation upwards of four thousand times. It occurred chiefly in those cases where it was used for the first time on the third or fourth day of the disease. A swelling of the legs, moreover, so common after plentiful bleeding in pneumonia and rheumatism, rarely succeeded the use of this remedy in the yellow fever.

2. Many of the indispositions, and much of the subsequent weakness of persons who had been cured

by copious blood-letting, have been ascribed to it. This is so far from being true, that the reverse of it has occurred in many cases. Mr Mierken worked in his sugar-house in good health, nine days after his last bleeding ; and Mr Gribble and Mr George seem by their appearance to have derived fresh vigour from their evacuations. I could mention the names of many people who think their constitutions have been improved by the use of those remedies ; and I know several persons in whom they have carried off habitual complaints. Mr Richard Wells attributes his relief from a chronic rheumatism to the copious bleeding and purging which were used to cure him of the yellow fever ; and Mr William Young, the bookseller, was relieved of a chronic pain in his side, by means of the same remedies.

3. It was said, that blood-letting was prescribed indiscriminately in all cases, without any regard to age, constitution, or the force of the disease. This is not true as far as it relates to my practice. In my prescriptions for patients whom I was unable to visit, I advised them, when they were incapable of judging of the state of the pulse, to be guided in the use of bleeding, by the degrees of pain they felt, particularly in the head ; and I seldom advised it for the first time, after the second, or third day of the disorder.

In pneumonies which affect whole neighbourhoods in the spring of the year, bleeding is the universal remedy. Why should it not be equally so, in a fever which is of a more uniform inflammatory nature, and which tends more rapidly to effusions, in parts of the body much more vital than the lungs ?

I have before remarked, that the debility which occurs in the yellow fever, is of the indirect kind. The debility in the plague is of the same nature. It has long been known that direct debility is to be removed by the gradual application of stimuli ; but it

has been less observed, that the excess of stimulus in the system is best removed in a *gradual* manner, and that too, in proportion to the degrees of indirect debility, which exist in the system.

This principle in the animal economy has been acknowledged by the practice of occasionally stopping the discharge of water from a canula in tapping, and of blood from a vein, in order to prevent fainting.

Child-birth induces fainting, and sometimes death, only by the *sudden* abstraction of the stimulus of distention and pain.

In all those cases where purging or bleeding have produced death in the yellow fever or plague, when they have been used on the first or second day of those disorders, I suspect that it was occasioned by the quantity of the stimulus abstracted being disproportionate to the degrees of indirect debility. The following facts will I hope throw light upon this subject.

1. Dr Hodges informs us, that " although blood could not be drawn in the plague, even in the smallest quantity, without danger, yet an hundred times the quantity of fluids, was discharged in pus from buboes without inconvenience \*."

2. Pareus, after condemning bleeding in the plague, immediately adds an account of a patient, who was saved from a hemorrhage from the nose, which continued two days †."

3. I have before remarked, that bleeding proved fatal in three cases in the yellow fever in the month of August; but at that time, I saw one, and heard of another case, in which death seemed to have been

\* Page 114.

† Skenius, Lib. vi. p. 831.

prevented by a bleeding at the nose. Perhaps the uniform good effects which were observed to follow a spontaneous hemorrhage from an orifice in the arm, arose wholly from the *gradual* manner in which the stimulus of the blood was, in this way, abstracted from the body. Dr Williams relates a case of the recovery of a gentleman from the yellow fever, by means of small hemorrhages, which continued three days, from wounds in his shoulders made by being cupped. He likewise mentions several other recoveries by hemorrhages from the nose, after "a vomiting of black humours, and a hiccup had taken place \*."

4. There is a disease in North Carolina, known among the common people by the name of the "pleurisy in the head." It occurs in the winter after a sickly autumn, and seems to be an evanescent symptom of a bilious remitting fever. The cure of it has been attempted by bleeding, in the common way, but generally without success. It has, however, yielded to this remedy in another form, that is, to the discharge of a few ounces of blood obtained by thrusting a piece of a quill up the nose.

5. Riverius describes a pestilential fever which prevailed at Montpelier, in the year 1623, which carried off one half of all who were affected by it †. After many unsuccessful attempts to cure it, this judicious physician prescribed the loss of two or three ounces of blood. The pulse rose with this small evacuation. Three or four hours afterwards, he drew six ounces of blood from his patients, and with the same good effect. The next day he gave a purge, which, he says, rescued his patients from the grave. All whom he treated in this manner recovered. The

\* Essay on the Bilious or Yellow Fever of Jamaica, p. 40.

† De Febre Pestilenti, vol. ii. p. 145, 146, and 147.

whole history of this epidemic is highly interesting, from its agreeing with our late epidemic in so many of its symptoms, more especially, as they appeared in the different states of the pulse.

An old and intelligent citizen of Philadelphia, who remembers the yellow fever of 1741, says, that when it first made its appearance, bleeding was attended with fatal consequences. It was laid aside afterwards, and the disease prevailed with great mortality, until it was checked by the cold weather. Had blood been drawn in the manner mentioned by Rivierius, or had it been drawn in the usual way, after the abstraction of the stimulus of heat by the cool weather, the disease might probably have been subdued, and the remedy of blood-letting thereby have recovered its character.

Dr Hodges has another remark in his account of the plague in London in the year 1665, which is still more to our purpose than the one which I have quoted from it upon this subject. He says, that "bleeding, as a preventive of the plague, was only safe and useful, when the blood was drawn by a *small* orifice, and a *small* quantity taken at *different times* \*."

I have remarked, in the history of the yellow fever of last autumn, that it was often cured on the first or second day by a copious sweat. The Rev. Mr Ustick was one among many whom I could mention, who were saved from a violent attack of the fever, by this evacuation. It would be absurd to suppose, that the contagion which produced the disease, was discharged in this manner from the body. The sweat seemed to cure the fever, only by lessening the quantity of the fluids, and thus *gradually* removing the indirect debility of the system. The profuse sweats which sometimes cure the plague, as well as the disease which is brought on by the bite of poisonous snakes, seem to act in the same way.

The system, under the impression of the contagion of a malignant fever, resembles a man struggling beneath a load of two hundred weight, who is able to lift only one hundred and seventy-five. In order to assist, him it will be to no purpose to attempt to infuse additional vigour into his muscles by the use of a whip, or of strong drink. Every exertion will serve only to waste his strength. In this situation (supposing it impossible to divide the weight which confines him to the ground) let the pockets of this man be emptied of their contents, and let him be stripped of so much of his clothing, as to reduce his weight five and twenty or thirty pounds. In this situation he will rise from the ground; but if the weights be abstracted suddenly, while he is in an act of exertion, he will rise with a spring that will endanger a second fall, and probably produce a temporary convulsion in his system. By abstracting the weights from his body more gradually, he will rise by degrees from the ground, and the system will accommodate itself in such a manner to the diminution of its pressure, as to resume its erect form, without the least deviation from the natural order of its appearance and motions.

It has been said, that the stimulating remedies of bark, wine, and the cold bath, were proper in our late epidemic in August, and in the beginning of September, but that they were improper afterwards. If my theory be just, they were more improper in August and the beginning of September, than they were after the disease put on the outward and common signs of inflammatory diathesis. The reason why a few strong purges cured the disease at its first appearance, was, because they abstracted in a *gradual* manner some of the immense portion of stimulus under which the arterial system laboured, and thus gradually relieved it from its low degrees of indirect debility. Bleeding was fatal in these cases, only because

it removed this indirect debility in too sudden a manner.

The principle of the gradual abstraction, as well as of the gradual application of stimuli to the body, in all the diseases of indirect debility on the one hand, and of direct, on the other, opens a wide field for the improvement of medicine. Perhaps all the discoveries of future ages will consist more in a new application of established principles, and in new modes of exhibiting old medicines, than in the discovery of new theories, or of new articles of the *Materia Medica*.

The reasons which induced me to prescribe purging and bleeding in so liberal a manner, naturally led me to recommend COOL and FRESH AIR to my patients. The good effects of it were obvious in almost every case in which it was applied. It was equally proper whether the arterial system was depressed, or whether it discovered in the pulse a high degree of morbid excitement. Dr Griffitts furnished a remarkable instance of the influence of cool air upon the fever. Upon my visiting him on the morning of the 8th of October, I found his pulse so full and tense, as to indicate bleeding; but after sitting a few minutes by his bed side, I perceived that the windows of his rooms had been shut in the night by his nurse, on account of the coldness of the night air. I desired that they might be opened. In ten minutes afterwards, the Doctor's pulse became so much slower and weaker, that I advised the postponement of the bleeding, and recommended a purge instead of it. The bleeding, notwithstanding, became necessary, and was used with great advantage in the afternoon of the same day.

The cool air was improper only in those cases where a chillness attended the disease.

For the same reason that I advised cool air, I directed my patients to use cold DRINKS. They consisted of lemonade, tamarind, jelly, and raw apple

water, toast and water, and of weak balm, and camomile tea. The subacid drinks were preferred in most cases, as being not only most agreeable to the taste, but because they tended to correct, by mixture, the acrid quality of the bile. All these drinks were taken in the early stage of the disorder. Towards the close of it, I permitted the use of porter and water, weak punch, and, when the stomach would bear it, weak wine-whey.

I forbade all cordial and stimulating food in the active state of the arterial system. The less my patients ate, of even the mildest vegetable food, the sooner they recovered. Weak coffee, which (as I have formerly remarked) was almost universally agreeable, and weak tea, were always inoffensive. As the action of the pulse diminished, I indulged my patients with weak chocolate; also with milk, to which roasted apples, or minced peaches, and (where they were not to be had) bread, or Indian mush, were added.

Towards the crisis, I advised the drinking of weak chicken, veal, or mutton broth; and, after the crisis had taken place, I permitted cold animal food to be eaten in a small quantity, and to be increased according to the waste of the excitability of the system. This strict abstinence which I imposed upon my patients, did not escape obloquy, but the benefits they derived from it, and the ill effects which arose in many cases, from a contrary regimen, satisfied me that it was proper in every case in which it was prescribed.

COLD WATER was a most agreeable and powerful remedy in this disorder. I directed it to be applied by means of napkins, to the head, and to be injected into the bowels by way of glyster. It gave the same ease to both, when in pain, which opium gives to pain from other causes. I likewise advised the washing of the face and hands, and sometimes the

feet, with cold water, and always with advantage. It was by suffering the body to lie for some time in a bed of cold water, that the inhabitants of the island of Massuah cured the most violent bilious fevers \*. When applied in this way, it gradually abstracts the heat from the body, and thereby lessens the action of the system. It differs as much, in its effects upon the body, from the cold bath, as rest in a cold room differs from exercise in the cold and open air.

I was first led to the practice of the partial application of cold water to the body, in fevers of too much force in the arterial system, by observing its good effects in active hemorrhages, and by recollecting the effects of a partial application of warm water to the feet, in fevers of an opposite character. Cold water when applied to the feet, as certain reduces the pulse in force and frequency, as warm water, applied in the same way, produces contrary effects upon it. In an experiment which was made, at my request, by one of my pupils, by placing his feet in cold pump water for a few minutes, the pulse was reduced 24 strokes in a minute, and became so weak as hardly to be perceptible.

In the use of the remedies which were necessary to overcome the inflammatory action of the system, I was obliged to reduce it below its natural point of excitement. In the present imperfect state of our knowledge in medicine, perhaps no disease of too much action, can be cured without it.

I have said in another place, that I was early obliged to desist from the use of wine, bark, and laudanum, in the first stage of this disorder. I found them as offensive to the stomach, and nearly as hurtful, in its second stage, as I had found them in its first. In this situation, new resources in the *materia medica* were opened to me. I had observed a favourable issue of the fever, in every case in which

\* Bruce's Travels.

a spontaneous discharge took place from the salivary glands. I had observed further, that all such of my patients (one excepted) as were salivated by the mercurial purges, recovered in a few days. This early suggested an idea to me, that the calomel might be applied to other purposes, than the discharging of bile from the bowels. I ascribed its salutary effects, when it salivated in the first stage of the disorder, to the excitement of inflammation and effusion in the throat, diverting them from more vital parts of the body. In the second stage of the disorder, I was led to prescribe it as a stimulant: and, with a view of obtaining this operation from it, I aimed at exciting a salivation as speedily as possible in all cases. Two precedents encouraged me to make trial of this remedy.

In the month of October 1789, I attended a gentleman in a bilious fever, which ended in many of the symptoms of a typhus mitior. In the lowest state of his fever, he complained of a pain in his right side, for which I ordered half an ounce of mercurial ointment to be rubbed on the part affected. The next day, he complained of a sore mouth, and in the course of four and twenty hours, he was in a moderate salivation. From this time his pulse became full and slow, and his skin moist. His sleep and appetite suddenly returned, and in a day or two he was out of danger. The second precedent for a salivation in a fever, which occurred to me, was in Dr Haller's short account of the works of Dr Gramen \*, and which I had a year before copied into my note book. The practice was, moreover, justified in point of safety, as well as the probability of success, by the accounts which Dr Clark has lately given of the effects of a salivation in the dysentery †. I began by prescribing the calomel in small doses, at

\* *Bibliotheca Medicinæ Practicæ*, vol. III. p. 491.

† *Diseases of long voyages to Hot Climates*, vol. II. p. 334.

short intervals, and afterwards I directed large quantities of the ointment to be rubbed upon the limbs. The effects of it, in every case in which it affected the mouth, were salutary. Dr Woodhouse improved upon my method of exciting the salivation, by rubbing the gums with calomel, in the manner directed by Mr Clare. It was more speedy in its operation in this way, than in any other, and equally effectual. Several persons appeared to be benefited by the mercury introduced into the system in the form of an ointment, where it did *not* produce a salivation. Among these were the Rev. Dr Blackwell, and Mr John Davis.

Since the above account was written of the good effects of a mercurial salivation in this fever, I have had great satisfaction in discovering that it was prescribed with equal, and even greater success, by Dr Wade in Bengal, in the year 1791, and by Mr Chisholm in the island of Granada, in the cure of bilious yellow fevers \*. Dr Wade did not lose one, and Mr Chisholm lost only one, out of forty eight patients in whom the mercury affected the salivary glands. The latter gave 150 grains of colomel, and applied the strongest mercurial ointment below the groin of each side, in some cases. He adds further, that not a single instance of a relapse occurred, where the disease was cured by salivation.

After the reduction of the system, *blisters* were applied with great advantage to every part of the body. They did most service when they were applied to the crown of the head. I did not see a single case in which a mortification followed the sore, which was created by a blister.

Brandy and water, or porter and water, when agreeable to the stomach, with now and then a cup of chicken broth, were the drinks I prescribed to assist in restoring the tone of the system.

\* Medical Commentaries, vol. XVIII. p. 209. 288.

In some cases I directed the limbs to be wrapped in flannels dipped in warm spirits, and cataplasms, of bruised garlic, to be applied to the feet. But my principal dependence, next to the use of mercurial medicines, for exciting a healthy action in the arterial system, was upon mild and gently stimulating food. This consisted of rich broths, the flesh of poultry, oysters, thick gruel, mush and milk, and chocolate. I directed my patients to eat or drink a portion of some of the above articles of diet every hour or two during the day; and in cases of great debility, I advised their being waked for the same purpose two or three times in the night. The appetite frequently craved more savoury articles of food, such as beef-stakes, and sausages: but they were permitted with great caution, and never until the system had been prepared for them by a less stimulating diet.

There were several *symptoms* which were very distressing in this disorder, and which required a specific treatment.

For the vomiting, with a burning sensation in the stomach, which came on about the 5th day, I found no remedy equal to a table-spoonful of sweet milk taken every hour, or to small draughts of milk and water. I was led to prescribe this simple medicine, from having heard from a West India practitioner, and afterwards read in Dr Hume's account of the yellow fever, encomiums upon the milk of the cocoanut for this troublesome symptom. Where sweet milk failed of giving relief, I prescribed small doses of sweet oil, and in some cases a mixture of equal parts of milk, sweet oil and molasses. They were all intended to dilute, or blunt the acrimony of the humours which were either effused, or generated in the stomach. Where they all failed of checking the vomiting, I prescribed weak camomile tea, or porter, or cyder and water, with advantage. In some of my patients, the stomach rejected all the mixtures

and liquors, which have been mentioned. In such cases, I directed the stomach to be left to itself for a few hours, after which it sometimes received and retained the drinks that it had before rejected, provided they were administered in a small quantity at a time.

The vomiting was sometimes stopped by a blister applied to the external region of the stomach.

A mixture of liquid laudanum and sweet oil, applied to the same place, gave relief where the stomach was affected by pain only, without a vomiting.

I have formerly mentioned that a distressing *pain* often seized the lower part of the *bowels*. I was early taught that laudanum was not a proper remedy for it. It yielded in almost every case, to two or three emollient glysters, or to the loss of a few ounces of blood.

The convalescence from this fever was in general rapid, but in some cases it was very slow. I was more than usually struck by the great resemblance which the system, in the convalescence from this fever, bore to the state of the body and mind in old age. It appeared, 1. in the great weakness of the body, more especially of the limbs. 2. In uncommon depression of mind, and in a great aptitude to shed tears. 3. In the absence or short continuance of sleep. 4. In the frequent occurrence of appetite, and in some cases in its inordinate degrees. And, 5. In the loss of the hair of the head, or in its being suddenly changed in some cases to a grey colour.

Pure air, gentle exercise, and agreeable society, removed the debility both of body and mind of this premature, and temporary old age. I met with a few cases, in which the yellow colour continued for several weeks after the patient's recovery from all the other symptoms of the fever. It was removed most speedily and effectually by two or three moderate doses of calomel and rhubarb.

A feeble and irregular intermittent, was very troublesome in some people, after an acute attack of the

fever. It yielded gradually to camomile or snake-root tea, and country air.

In a publication dated the 16th of September, I recommended a diet of milk and vegetables, and cooling purges to be taken once or twice a week, to the citizens of Philadelphia. This advice was the result of the theory of the disease I had adopted, and of the successful practice which had arisen from it. In my intercourse with my fellow citizens, I advised this regimen to be regulated by the degrees of fatigue and contagion to which they were exposed. I likewise advised moderate blood-letting to all such persons as were of a plethoric habit. To men whose minds were influenced by the publications in favour of bark and wine, and who were unable at that time to grasp the extent and force of the contagion of this terrible fever, the idea of dieting, purging, or bleeding, the inhabitants of a whole village or city, appeared to be extravagant and absurd: but I had many precedents, besides the authority of reason, in favour of the advice. Dr Mitchel recommended moderate bleeding with success, as a preventive of the yellow fever in Virginia, in the year 1741. A military surgeon, belonging to the French troops at Hispaniola, assured Dr Foulke that he had for many years bled the recruits from France, as soon as they arrived, and thereby secured them from a seasoning by the yellow fever. The less mortality of this disorder in the French and Spanish, than in the English Islands, has been justly attributed to the natives of France and Spain carrying with them to the West Indies more temperate habits, in the use of wine and animal food, than the natives of Great Britain. I had, moreover, the analogy of the regimen made use of to prepare the body for the small-pox and plague, in favour of this advice. Dr Haller has given extracts from the histories of two plagues, in which the action of the contagion was prevented, or miti-

gated, by bleeding\*. Dr Hodges confirms the utility of the same practice. The benefits of low diet, as a preventive of the plague, were established by many authors, long before they received the testimony of the benevolent Mr Howard in their favour. Socrates in Athens, and Justinian in Constantinople, were preserved by means of their abstemious modes of living, from the plagues which occasionally ravaged those cities. By means of the low diet, gentle physic, and occasional bleedings, which I thus publicly recommended, the disease was prevented in many instances, or rendered mild where it was taken. But my efforts to prevent the disease in my fellow-citizens, did not end here. I advised them, not only in the public papers, but in my intercourse with them, to avoid heat, cold, labour, and every thing else that could excite the contagion (which I knew to be present in all their bodies) into action. I forgot upon this occasion the usual laws which regulate the intercourse of man with man in the streets, and upon the public roads, in my excursions into the neighbourhood of the city. I cautioned many persons, whom I saw walking or riding in an unsafe manner, of the danger to which they exposed themselves; and thereby I hope prevented an attack of the disorder in many people. If in a single instance I unhappily excited an emotion of terror in a fellow-citizen, by this conduct, I thus publicly ask his pardon. There should be no ceremony in calling to a man to avoid a precipice; or in pulling him out of a fire.

It was from a conviction of the utility of low diet, gentle evacuations, and of carefully shunning all the exciting causes which I have mentioned, that I concealed in no instance from my patients the name of their disorder. This plainness, which was blamed by weak people, produced strict obedience to my di-

\* *Bibliotheca Medicinæ Practicæ*, Vol. II. p. 93, and 387.

rections, and thereby limited the propagation of the fever in many families, or rendered it, when taken, as mild as inoculation does the small pox. The opposite conduct of several physicians, by preventing the above precautions, increased the mortality of the disease; and in some instances contributed to the extinction of whole families. Such have been, and ever will be, the effects of ignorance and fraud in the profession of medicine.

I proceed now to make a few remarks upon the remedies recommended by Doctors Kuhn and Stevens, and by the French physicians.

Had the whole *materia medica* been ransacked, there could not have been found any three medicines more opposite to the disorder than bark, wine, and laudanum. In every case in which I prescribed bark, it was offensive to the stomach. In several tertians which attended the convalescence from a common attack of the fever, I found it always unsuccessful, and once hurtful. Mr Willing took it for several weeks without effect. About half a pint of a weak decoction of the bark produced in Mr Samuel Meredith, a paroxism of the fever, so violent as to require the loss of ten ounces of blood to moderate it. Dr Annan informed me that he was forced to bleed one of his patients twice, after having given him a small quantity of bark, to hasten his convalescence. If in any case it was inoffensive, or did service, I suspect it must have acted upon the bowels as a purge. Dr Sydenham says the bark cured intermittents by this evacuation\*; and Mr Bruce says it operated in the same way, when it cured the bilious fevers at Maffuah.

*Wine* was nearly as disagreeable as the bark to the stomach, and equally hurtful. I tried it in every form, and of every quality, but without success. It was either rejected by the stomach, or produced in

\* VOL. I. p. 140.

it a burning sensation. I should suspect that I had been mistaken in my complaints against wine, had I not since met with an account in Skenkius of its having destroyed all who took it in the famous Hungarian fever, which prevailed with great mortality over nearly every country in Europe, about the middle of the 16th century\*. Dr Wade declares wine to be " ill adapted to the fevers of Bengal, where the treatment has been proper in other respects."

*Laudanum* has been called by Dr Moseley " a fatal medicine" in the yellow fever. In one of my patients, who took only fifteen drops of it, without my advice, to ease a pain in his bowels, it produced a delirium, and death in a few hours. I was much gratified in discovering that my practice, with respect to the use of opium in this fever, accorded with Dr Wade's in the fever of Bengal. He tells us that " it was mischievous in almost every instance, even in combination with antimonials."

The *spices* were hurtful in the first stage of the fever, and when sufficient evacuations had been used, they were seldom necessary in its second.

The *elixir of vitriol* was in general offensive to the stomach.

The *cold bath* was useful in those cases where its sedative prevailed over its stimulating effects. But this could not often happen, from the suddenness and force with which the water was thrown upon the body. In two cases in which I prescribed it, it produced a gentle sweat, but it did not save life. In a third it removed a delirium, and reduced the pulse for a few minutes, in frequency and force, but this patient died. The recommendation of it, indiscriminately in all cases, was extremely improper. In that chilliness and tendency to fainting upon the least motion, which attended the disorder in some patients,

\* Omnes qui vini potionē non abstinuerunt, interiere, adeo ut summa spes salvationis in vini abstinentia collocata videretur. Lib. vi. p. 847.

it was an unsafe remedy. I heard of a woman who was seized with delirium immediately after using it, from which she never recovered ; and of a man who died a few minutes after he came out of a bathing tub. Had this remedy been the exclusive antidote to the yellow fever, the mortality of the disease would have been but little checked by it. Thousands must have perished from the want of means to procure tubs, and of a suitable number of attendants to apply the water, and to lift the patient in and out of bed. The reason of our citizens ran before the learning of the friends of this remedy ; and, long before it was abandoned by the physicians, it was rejected as useless, or not attempted, because impracticable, by the good sense of the city. It is to be lamented that the remedy of cold water has suffered in its character by the manner in which it was advised. In fevers of too much action, it reduces the morbid excitement of the blood-vessels, provided it be applied *without force*, and for a considerable time to the body. It is in the jail fever, and in the second stage of the yellow fever only, in which its stimulant and tonic powers are proper. Dr Jackson establishes this mode of using it, by informing us, that when it did service, it "gave vigour and tone" to the system\*.

The *third* mode of practice which I mentioned in this fever, consisted of a union of the evacuating and tonic remedies. The physicians who adopted this mode, gave calomel by itself in small doses, on the first, or second day of the fever, bled once or twice in a sparing manner, and gave the bark, wine, and laudanum, in large quantities upon the first appearance of a remission. After they began the use of these remedies, purging was omitted, or, if the bowels were moved, it was only by means of gentle glysters. This practice I shall say hereafter was not much more successful than that which was recom-

\* Fevers of Jamaica.

mended by Dr Kuhn and Dr Stevens. It resembled throwing water and oil at the same time upon a fire, in order to extinguish it.

The *French* remedies were nitre, and tremor tartar, in small doses, centaury tea, camphor, and several other warm medicines; subacid drinks taken in large quantities, the warm bath, and moderate bleeding.

After what has been said, it must be obvious to the reader, that the nitre and tremor tartar, in small doses, could do no good; and that camphor and all cordial medicines must have done harm. The diluting subacid drinks which the French physicians gave in large quantities, were useful in diluting and blunting the acrimony of the bile; and to this remedy, assisted by occasional bleeding, I ascribe most of the cures which were performed by those physicians.

Those few persons, in whom the *warm bath* produced copious and universal sweats, recovered; but in nearly all the cases which came under my notice, it did harm.

I come now to enquire into the comparative success of the *four* different modes of practice which have been mentioned.

I have already said, that ten out of thirteen patients whom I treated with bark, wine, and laudanum, and that three out of four, in whom I added the cold bath to those remedies, died. Dr Pennington informed me, that he had lost all the patients, (six in number) to whom he had given the above medicines. Dr Johnson assured me, with great concern, about two weeks before he died, that he had not recovered a single patient by them. Whole families were swept off, where these medicines were used. But further, most of those persons who caught the fever in the city, and sickened in the country, or in the neighbouring towns, and who were treated with tonic remedies, died. There was not a single cure

performed by them in New York, where they were used with every possible advantage. But why do I multiply proofs of their deadly effects? The clamours of hundreds whose relations had perished by them, and the fears of others, compelled those physicians who had been most attached to them, to lay them aside, or to prepare the way for them (as it was called) by purging and bleeding! The bathing tub soon shared a worse fate than bark, wine, and laudanum; and long before the disease disappeared, it was discarded by all the physicians in the city.

In answer to these facts, we have been told that Mr Hamilton and his family recovered by the use of Dr Stevens's remedies. I shall not say of those cures, what some gentlemen of the faculty, who had seen but little of the disease, and who had forgotten that a powerful epidemic banishes, or unites with all other diseases, have said of my cures, viz. that they were not of the yellow fever. It was impossible for Mr Hamilton to have had a fever at that time of any other kind. The neighbourhood in which he lived was healthy, and he had been daily exposed, at his office in Chesnut-street, to the contagion of the prevailing epidemic. The disease in this case was either very light, or Mr Hamilton owes more to the strength of his constitution, and the goodness of heaven, than most of the people who recovered from the disorder. That it was light in all the branches of Mr Hamilton's family who were infected by him, I infer from this being the case in every similar instance in which the disease spread in the country.

"Success (says Dr Sydenham) is not a sufficient proof of the excellency of a method of cure in acute diseases, since some are recovered by the imprudent procedure of old women; but it is further required, that the distemper should be *easily cured*, and yield conformably to its *own nature* \*;" and again, speak-

\* Vol. II. p. 254.

ing of the cure of the new fever of 1685, this incomparable physician observes, " If it be objected, that this fever frequently yields to a quite contrary method to that which I have laid down, I answer, that the cure of a disease by a method which is attended with success only now and then in a few instances, differs extremely from that practical method, the efficacy whereof appears both from its recovering greater numbers, and all the practical phenomena happening in the cure † "

After what has been said of Mr Hamilton's cure, it will not be expected that I should say any thing of the three patients mentioned in Dr Kuhn's letter to the mayor who recovered under the use of Dr Stevens's remedies. The fourth patient mentioned by Dr Kuhn, whom he left on the 4th day of the disease with " no unfavourable symptoms," was Dr Hutchinson. I visited him the day after Dr Kuhn left him, and found him sitting in a chair near the head of his bed, with all his clothes on, as if he had been in his usual health. A short examination of his case, satisfied me that he was in extreme danger. His face was suffused with blood. He had a full pulse, and an hemorrhage from his gums, which last symptom I was told came on the day before. I pressed him to take a strong mercurial purge, but he refused it. From that moment I despaired of his recovery. He died three days afterwards.

The reader will naturally pause after reviewing these remarks upon the above cures, and ask, whether it was consistent with the rules of just and safe reasoning in medicine, to deduce a general and uniform method of treating this disorder, from the favourable issue of only four or five cases; and whether it was candid, to condemn, in the most unqualified manner, a contrary mode of practice, after re-

† Vol. II. p. 354.

peated public and private declarations, that it had at that time cured several hundred people.

Far be it from me to deny that indirect debility may not be overcome by such stimuli as are more powerful than those which occasion it. This has sometimes demonstrated by the efficacy of bark, wine, and laudanum, in the confluent and petechial small-pox; but even this state of that disorder yields more easily to blood-letting, or to plentiful evacuations from the stomach and bowels, on the first or second day of the eruptive fever. This I have often proved, by giving a large dose of tartar emetic, and calomel, as soon as I was satisfied, from circumstances, that my patient was infected with the small-pox. But the indirect debility of the yellow fever appears to be much greater than that which occurs in the small-pox, and hence it more uniformly resisted the most powerful tonic remedies.

I have publicly asserted, that the remedies which I adopted, and of which I have given a history, cured a greater proportion than ninety-nine out of an hundred of all who applied to me on the first day of the disorder before the 15th day of September. I regret that it is not in my power to furnish a list of them; for a majority of them were poor people, whose names are still unknown to me. I was not singular in this successful practice in the first appearance of the disorder. Dr Pennington assured me on his death-bed, that he had not lost one out of forty-eight patients whom he had treated agreeably to the principles and practice I had recommended. Dr Griffitts triumphed over the disease in every part of the city, by the use of what were called the new remedies. My former pupils spread by their success, the reputation of purging and bleeding, wherever they were called. Unhappily the pleasure we derived from this success in the treatment of the disorder, was of short duration. Many circumstances

contributed to lessen it, and to revive the mortality of the fever. I shall briefly enumerate them.

1. The distraction produced in the public mind by the recommendation of remedies, the opposites in every respect of purging and bleeding.

2. The opinion which had been published by several physicians, and inculcated by others, that we had other fevers in the city besides the yellow fever. This produced a delay in many people in sending for a physician, or in taking medicines for two or three days, from a belief that they had nothing but a cold, or a common fever. Some people were so much deceived by this opinion, that they refused to send for physicians lest they should be infected by them with the yellow fever. In most of the cases in which these delays took place, the disease proved mortal.

To obviate a suspicion, that I have laid more stress upon the fatal influence of this error than is just, I shall here insert an extract of a letter I have lately been favoured with from Mr John Connelly, one of the city committee, who frequently left his brethren in the City Hall, and spent many hours in visiting and prescribing for the sick. "The publications (says he) of some physicians that there were but few persons infected with the yellow fever, and that many were ill with colds and common remitting and fall fevers, proved fatal to almost every family which was credulous enough to believe them. That opinion flew its hundreds, if not its thousands, many of whom did not send for a physician until they were in the last stage of the disorder, and beyond the power of medicine."

3. The interference of the friends of the stimulating system, in dissuading patients from submitting to sufficient evacuations.

4. The deceptions which were practised by some patients upon their physicians in their reports of the quantity of blood they had lost, or of the quality, and number of their evacuations by stool.

5. The impracticability of procuring bleeders as soon as bleeding was prescribed. Life, in this disease, as in the apoplexy, frequently turned upon that operation being performed within an *hour*. It was often delayed from the want of a bleeder, one or two days.

6. The inability of physicians, from the number of their patients, and from frequent indisposition, to visit the sick, at such times as was necessary to watch the changes in their disorder.

7. The great accumulation, and concentration of the contagion in sick rooms, from the continuance of the disease in the city, whereby the system was exposed to a constant stimulus, and the effect of evacuations was thus defeated.

8. The want of skill or fidelity in nurses to administer the medicines properly, to persuade patients to drink frequently; also to supply them with food or cordial drinks, when required in the night.

9. The great degrees of indirect debility induced in the systems of many of the people who were affected by the disorder, from fatigue in attending their relations or friends.

10. The universal depression of mind, amounting in some instances to despair, which affected many people. What medicine could act upon a patient who awoke in the night, and saw through the broken and faint light of a candle, no human creature, but a black nurse, perhaps asleep in a distant corner of

the room ; and who heard no noise, but that of a herse, conveying perhaps a neighbour or a friend, to the grave ? The state of mind under which many were affected by the disease, is so well described by the Rev. Dr Smith, in the case of his wife, in a letter I received from him in my sick room, two days after her death, that I hope I shall be excused for inserting an extract from it. It forms a part of the history of the disease. The letter was written in answer to a short note of condolence which I sent to the Doctor immediately after hearing of Mrs Smith's death. After some pathetic expressions of grief, he adds, "The scene of her funeral, and some preceding circumstances, can never depart from my mind. On our return from a visit to our daughter, whom we had been striving to console on the death of Mrs Keppele, who was long familiar, and dear to both, my dear wife passing the burying ground gate, led me into the ground, viewed the graves of her two children, called the old grave-digger, marked a spot for herself as close as possible to them and the grave of Dr Phineas Bond, whose memory she adored. Then, by the side of the spot she had chosen, we found room and chose *mine*, pledging ourselves to each other, and directing the grave-digger that this should be the order of our interment. We returned to our house. Night approached. I hoped my dear wife had gone to rest, as she had chosen, since her return from nursing her daughter, to sleep in a chamber by herself, through fear of infecting her grand-child and me. But it seems she closed not her eyes ; sitting with them fixed through her chamber window on Mrs Keppele's house, 'till about midnight she saw her herse, and followed it with her eyes as far as it could be seen. Two days afterwards Mrs Rodgers, her next only surviving intimate friend, was carried past her window ; and by no persuasion could I draw her from thence, nor stop her sympathetic foreboding tears, so long as her

eyes could follow the funeral, which was through two squares, from Fourth to Second street where the hearse disappeared." The Doctor proceeds in describing the distress of his wife. But pointed as his expressions are, they do not convey the gloomy state of her mind with so much force as she has done it herself in two letters to her niece Mrs Cadwallader, who was then in the country. The one was dated the 9th, the other the 11th of October. I shall insert a few extracts from each of them. "October 9th : It is not possible for me to pass the streets without walking in a line with the dead. Passing infected houses, and looking into open graves. This has been the case for many weeks." "I don't know what to write ; my head is gone, and my heart is torn to pieces." "I intreat you to have no fears on my account. I am in the hands of a just and merciful God, and his will be done."

October 11th, "Don't wonder that I am so low to day. My heart is sunk down within me." The next day this excellent woman sickened, and died on the 19th of the same month.

If in a person, possessed naturally of uncommon equanimity and fortitude, the distresses of our city produced such dejection of spirits, what must have been their effect upon hundreds, who were not endowed with those rare and extraordinary qualities of mind ? Death in this, as well as in many other cases, in which medicine had done its duty, appeared to be the inevitable consequence of the total abstraction of the energy of the mind in restoring the natural motions of life.

Under all the circumstances which have been mentioned, which opposed the system of depletion, in the cure of this fever, it was still far more successful than any other mode of cure that had been pursued before in the United States or in the West Indies.

Three out of four died of the disorder in Jamaica, under the care of Dr Hume.

Dr Blane considers it as one of the "most mortal" of diseases, and Dr Jackson places a more successful mode of treating it, among the subjects which will admit of "innovation" in medicine.

After the 15th of September my success was much limited, compared with what it had been before that time. But at no period of the disease did I lose more than one in twenty of those whom I saw on the first day, and attended regularly through every stage of the fever; provided they had not been previously worn down by attending the sick.

The following statement, which will admit of being corrected, if it be inaccurate, will, I hope, establish the truth of the above assertions.

About one half of the families whom I have attended for many years, left the city. Of those who remained, many were affected by the disorder. Out of the whole of them, after I had adopted my second mode of practice, I lost only five heads of families, and about a dozen servants and children. In no instance did I lose both heads of the same family. My success, in these cases, was owing to two causes: 1st, To the credit my former patients gave to my public declaration, that we had only *one* fever in the city; hence they applied on the *first* day, and sometimes on the *first* hour of their indisposition: and, 2dly, To the numerous pledges many of them had seen of the safety and efficacy of copious blood-letting by my advice, in other diseases: hence my prescription of that necessary remedy was always obeyed in its utmost extent. Of the few adults whom I lost, among my former patients, two of them were old people; two took laudanum without my knowledge; and one refused to take medicine of any kind; all the rest had been worn down by previous fatigue.

I have before said, that a great number of the blacks were my patients. Of these not one died un-

der my care. This uniform success among those people, was not owing altogether to the mildness of the disease, for I shall say presently, that a great proportion of a given number died under other modes of practice.

In speaking of the comparative effects of purging and bleeding, it may not be amiss to repeat, that not one pregnant woman, to whom I prescribed them, died, or suffered abortion. Where the tonic remedies were used, abortion or death, and in many instances both, were nearly universal.

Many whole families, consisting of five, six, and in three instances, of nine members, were recovered by plentiful purging and bleeding. I could swell this work by publishing a list of those families; but I take more pleasure in adding, that I was not singular in my success in the use of the above remedies. They were prescribed with great advantage by many of the physicians of the city, who had, for a while, given tonic medicines without effect. I shall not mention the names of any of the physicians, who *totally renounced* those medicines, lest I should give offence by not mentioning them all. Many large families were cured by some of them, after they adopted and prescribed copious purging and blood letting. One of them cured ten in the family of Mr Robert Haydock; by means of those remedies. In one of that family the disease came on with a vomiting of black bile.

But the use of the new remedies was not directed finally by the physicians alone. The clergy, the apothecaries, many private citizens, several intelligent women, and two black men, prescribed them with great success. Nay more, many persons prescribed them to themselves; and, as I shall say hereafter, with a success that was unequalled by any of the regular or irregular practitioners in the city.

It was owing to the almost universal use of purging and bleeding, that the mortality of the disease di-

minished in proportion as the number of persons who were affected by it increased about the middle of October. It was scarcely double of what it was in the middle of September, and yet six times the number of persons were probably at that time confined by it.

The success of copious purging and bleeding was not confined to the city of Philadelphia. Several persons, who caught the disease in town, and sickened in the country, were cured by them.

Could a comparison be made of the number of patients who died of our late fever, after having been plentifully bled and purged, with those who died of the yellow fever in the years 1699, 1741, 1747, and 1762, I am persuaded that the proportion would be very small in the year 1793, compared with the former years \*. Including all who died under every mode of treatment, I suspect the mortality to be less in proportion to the population of the city, and the number of persons who were affected, than it was in any of the other years that have been mentioned.

Not less than 6000 of the inhabitants of Philadelphia probably owe their lives to purging and bleeding, during the late autumn.

I proceed with reluctance to inquire into the comparative success of the French practice. It would not be difficult to decide upon it from many facts that came under my notice in the city; but I shall rest its merit wholly upon the returns of the number of deaths at Bush-hill. This hospital, after the 22d of September, was put under the care of a French physician, who was assisted by one of the physicians of the city. The hospital was in a pleasant and airy

\* It appears from one of Mr Norris's letters, dated the 9th of November, O. S. that there died 220 persons in the year 1699, with the yellow fever. Between 80 and 90 of them, he says, belonged to the society of Friends. The city at this time, probably, did not contain more than 2 or 3000 people, many of whom, it is probable, fled from the disorder.

situation; it was provided with all the necessaries and comforts for sick people that humanity could invent, or liberality supply. The attendants were devoted to their duty; and cleanliness and order pervaded every room in the house. The reputation of this hospital, and of the French physician, drew patients to it in the early stage of the disorder. Of this I have been assured in a letter from Dr Annan, who was appointed to examine and give orders of admission into the hospital, to such of the poor of the district of Southwark, as could not be taken care of in their own houses. Mr Olden has likewise informed me, that most of the patients who were sent to the hospital by the city-committee (of which he was a member) were in the first stage of the fever. With all these advantages, the deaths between the 22d of September and the 6th of November, amounted to 448 out of 807 patients, who were admitted into the hospital within that time. Three fourths of all the blacks (nearly 20) who were patients in this hospital, died. A list of the medicines prescribed there may be seen in the minutes of the proceedings of the city committee. Calomel and jalap are not among them. *Moderate* bleeding and purging with Glauber salts, I have been informed, were used in some cases by the physicians of this hospital. The proportion of deaths to the recoveries, as it appears in the minutes of the committee from whence the above report is taken, is truly melancholy! I hurry from it, therefore, to a part of this work to which I have looked with pleasure, ever since I sat down to compose it.

I have said, that the clergy, the apothecaries, and many other persons who were uninstructed in the principles of medicine, prescribed purging and bleeding, with great success, in this disorder. Necessity gave rise to this undisciplined sect of practitioners; for they came forward to supply the places of the regular bred physicians who were sick or dead. I shall

mention the names of a few of those persons who distinguished themselves as volunteers in this new work of humanity. The late Rev. Mr Fleming, one of the ministers of the Catholic church, carried the purging powders in his pocket, and gave them to his poor parishioners with great success. He even became the advocate of the new remedies. In a conversation I had with him on the 22d of September, he informed me, that he had advised four of our physicians, whom he met a day or two before, "to renounce the pride of science, and to adopt the new mode of practice, for that he had witnessed its good effects in many cases." Mr John Keihmle, a German apothecary, has assured me, that out of 314 patients whom he visited, and 187 for whom he prescribed from the reports of their friends, he lost only 47 (which is nearly but one in eleven) and that he treated them all agreeably to the method which I had recommended. The Rev. Mr Schmidt, one of the ministers of the Lutheran church, was cured by him. I have before mentioned an instance of the judgment of Mr Connelly, and of his zeal in visiting and prescribing for the sick. His remedies were bleeding and purging. He moreover bore a constant and useful testimony against bark, wine, laudanum, and the warm bath.\* Mrs Paxton in Carter's alley, and Mrs Evans the wife of Mr John Evans in Second-street, were indefatigable; the one in distributing mercurial purges composed by herself, and the other in urging the necessity of *copious* bleeding and purging among her friends and neighbours, as the

\* In the letter before quoted, from Mr Connelly, he expresses his opinion of those four medicines in the following words. "Laudanum, bark, and wine, have put a period to the existence of some, where the fever has been apparently broken, and the patients in a fair way of recovery; a single dose of laudanum has hurried them suddenly into eternity. I have visited a few patients, where the hot bath was used, and am convinced that it only tended to weaken and relax the systems, without producing any good effect."

only safe remedies for the fever. These worthy women were the means of saving many lives. † Absalom Jones, and Richard Allen, two black men, spent all the intervals of time, in which they were not employed in burying the dead, in visiting the poor who were sick, and in bleeding and purging them, agreeably to the directions which had been printed in all the news papers. Their success was unparalleled by what is called regular practice. This encomium upon the practice of the blacks, will not surprise the reader, when I add, that they had no fear of putrefaction in the fluids, nor of the calumnies of a body of fellow citizens in the republic of medicine, to deter them from plentiful purging and bleeding. They had besides no more patients than they were able to visit two or three times a day. But great as their success was, it was exceeded by those persons who in despair of procuring medical aid of any kind, purged and bled themselves. This palm of superior success, will not be withheld from those people, when I explain the causes of it. It was owing to their *early* use of the proper remedies, and to their being guided in the repetition of them, by the continuance of a tense pulse, or of pain and fever. A day, an afternoon, and even an hour, were not lost by these people in waiting for the visit of a Physician, who was often detained from them, by sickness, or by new and unexpected engagements, by which means the precious moment for using the remedies, with effect, passed

† The yellow fever prevailed at the Carracos in South America in October 1793, with great morality, more especially among the Spanish troops. Nearly all died who were attended by Physicians. Recourse was finally had to the old women, who were successful in almost every case to which they were called. Their remedies were a liquor called *nareneado* (a species of lemonade) and a tea made of a root called *fistula*. With these drinks, they drenched their patients for the first two or three days. They induced plentiful sweats, and probably, after blunting, discharged the bile from the bowels. I received this information from an American gentleman who had been cured by one of those Amazons in medicine, in the above way.

irrevocably away. I have stated these facts from faithful inquiries, and numerous observations. I could mention the names and families of many persons who thus cured themselves. One person only shall be mentioned, who has shewn by her conduct what reason is capable of doing when it is forced to act for itself. Mrs Long, a widow, after having been twice unsuccessful in her attempts to procure a physician, undertook at last to cure herself. She took several of the mercurial purges, agreeably to the printed directions, and had herself bled *seven* times in the course of five or six days. The indication for repeating the bleeding, was the continuance of the pain in her head. Her recovery was rapid and complete. The history of it was communicated to me by herself, with great gratitude, in my own house, during my second confinement with the fever. To these accounts of persons who cured themselves in the city, I could add many others, of citizens who sickened in the country, and who cured themselves by plentiful bleeding and purging, without the attendance of a physician.

From a short review of these facts, reason and humanity awake from their long repose in medicine, and unite in proclaiming, that it is time to take the cure of pestilential fevers out of the hands of physicians, and to place it in the hands of the people. Let not the reader startle at this proposition. I shall give the following reasons for it.

1. In consequence of these pestilential fevers affecting a great number of people at one time, it has always been, and always will be, impossible for them *all* to have the benefit of medical aid, more especially as the proportion of physicians to the number of sick, is generally diminished upon these occasions, by desertion, sickness, and death.

2. The safety of committing to the people the cure of pestilential fevers, particularly the yellow fever and the plague, is established by the simplicity and uniformity of their proximate cause, and of their remedies. However diversified they may be in their symptoms, the system in both diseases is always under a state of indirect debility, and in all cases requires the abstraction of stimulus in a greater or less degree, or in a sudden or gradual manner. There can never be any danger of the people injuring themselves by mistaking any other disease for a yellow fever, or a plague, for no other febrile disorder can prevail with them. It was probably to prevent this mistake, that the Benevolent Father of mankind, who has permitted no evil to exist which does not carry its antidote along with it, originally imposed that law upon all great and mortal epidemics.

3. The history of the yellow fever in the West Indies, proves the advantage of trusting patients to their own judgment. Dr Lind has remarked, that a greater proportion of sailors who had no physicians, recovered from that fever, than of those who had the best medical assistance. The fresh air of the deck of a ship, a purge of salt water, and the free use of cold water, probably triumphed here over the cordial juleps of physicians.

4. By committing the cure of this and other pestilential diseases to the people, all those circumstances which prevented the universal success of purging and bleeding in our late epidemic, will have no operation. The fever will be mild in most cases; for all will prepare themselves to receive it by a vegetable diet, and by moderate evacuations. The remedies will be used the *moment* the disease is felt, or even seen, and the contagion generated by it, will be feeble and propagated only to a small distance from such patients. There will then be no disputes among

physicians, about the nature of the disease, to distract the public mind, for they will seldom be consulted in it. None will suffer from chronic debility induced by previous fatigue, in attending the sick, nor from the want of nurses ; for few will be so ill as to require them, and there will be no " foreboding" fears of death, or despair of recovery, to invite an attack of the disease, or to ensure its mortality.

The small-pox was once as fatal as the yellow fever and the plague. At present, it yields as universally to a vegetable diet, and evacuations, in the hands of apothecaries, the clergy, and even of the good women, as it does in the hands of Doctors of physic.

They have narrow conceptions, not only of the divine goodness, but of the gradual progress of human knowledge, who suppose that all pestilential diseases shall not, like the small pox, sooner or later cease to be the scourge and terror of mankind.

For a long while, air, water, and even the light of the sun, were dealt out by physicians to their patients with a sparing hand. They possessed for several centuries the same monopoly of many artificial remedies. But a new order of things is rising in medicine as well as in government. Air, water, and light, are taken without the advice of a physician, and bark and laudanum are now prescribed every where by nurses, and mistresses of families, with safety and advantage. Human reason cannot be stationary upon these subjects. The time must, and will come, when, in addition to the above remedies, the general use of calomel, jalap, and the lancet, shall be considered among the most essential articles of the knowledge and rights of man.

It is no more necessary, that a patient should be ignorant of the medicine he takes to be cured by it, than that the business of government should be conducted with secrecy, in order to ensure obedience to just laws. Much less is it necessary, that the means of life should be prescribed in a dead language, or

dictated with the solemn pomp of a necromancer. The effects of imposture in every thing are like the artificial health produced by the use of ardent spirits. Its vigour is temporary, and is always followed by misery and death.

The belief that the yellow fever and the plague are necessarily mortal, is as much the effect of a superstitious torpor in the understanding, as the ancient belief, that the epilepsy was a supernatural disease, and that it was an offence against heaven to attempt to cure it. It is partly from the influence of this torpor in the minds of some people, that the numerous cures of the yellow fever, performed by a few simple remedies, were said to be of other diseases. It is necessary, for the conviction of such persons, that patients should always *die* of that, and other dangerous disorders, to prove that they have been affected by them.

The repairs which our world is undergoing, as far as they relate to the melioration of the condition of man, will be incomplete, until pestilential fevers cease to be numbered among the widest outlets of human life.

There are many things which are now familiar to women and children, which were known a century ago only to a few men who lived in closets, and were distinguished by the name of philosophers.

We teach an hundred things in our schools less useful, and many things more difficult, than the knowledge that would be necessary to cure a yellow fever or the plague.

In my attempts to teach the citizens of Philadelphia by my different publications, the method of curing themselves of our late fever, I observed no difficulty in their apprehending every thing that was addressed to them, except what related to the different states of the pulse. All the knowledge that is necessary to discover when blood-letting is proper, might be taught to a boy or girl of twelve years old

in a few hours. I taught it in less time to several persons during the prevalence of our late epidemic.

I would as soon believe that ratafia was intended by the Author of Nature, to be the only drink of man, instead of water, as believe that the knowledge of what relates to the health and lives of a *whole city, or nation*, should be confined to one, and that a small or a privileged order of men.—But what have physicians, what have universities, or medical societies done, after the labours and studies of many centuries, towards lessening the mortality of pestilential fevers? They have either copied, or contradicted each other in all their publications. Plagues and malignant fevers are still leagued with war and famine, in their ravages upon human life.

Botallus in France, and Dr Sydenham in England, it is true, long ago used the proper remedies for those disorders with universal success; but they were unable to introduce them into general practice. The reason is obvious: They recommended them in their writings only to physicians. At the expence of an immense load of obloquy, I have addressed my publications to the people. The appeal, though hazardous, in the present state of general knowledge in medicine, has succeeded. The citizens of Philadelphia are delivered from their fears of copious evacuations, of cold air, and cold water, and above all, of a sore mouth from mercury, in the cure of the yellow fever; and the pride and formalities of medicine, as far as they relate to this disease, are now as completely discarded in our city, as the deceptions of witchcraft were, above a century ago.

To prevent the propagation and mortality of this fever, it will be necessary, when it makes its appearance in a city or country, to publish an account of those symptoms which I have called the precursors of the disease, and to exhort the people, as soon they feel those symptoms, to have immediate recourse to the remedies of purging or bleeding. The danger

of delay in using one or both those remedies, should be inculcated in the strongest terms; for the disease, like Time, has a lock on its forehead, but is bald behind. The bite of a rattle-snake is seldom fatal, because the medicines which cure it are applied, or taken, as soon as the poison comes in contact with the blood. There is less danger to be apprehended from the contagion of the yellow fever in the system than from the poison of the snake, provided the remedies for it are administered within a few hours after it is excited into action.

Let persons, who are subject to chronic pains, or diseases of any kind, be advised not to be deceived by them. Every pain, at such a time, is the beginning of the disease; for the contagion, I have said, always acts first on debilitated parts of the body. From an ignorance of this law of epidemics, many persons, by delaying their applications for help, perished with our late fever.

Let nature be trusted in no case whatever, to cure this disease; and let no attack of it, however light, be treated with neglect. Death as certainly performs his work, when he steals on the system in the form of a mild intermittent, as he does, when he comes on with the symptoms of apoplexy, or a black vomiting.

Cleanliness in houses and dress, cannot be too often inculcated, during the prevalence of a yellow fever.

Lastly, Let those who are in health be directed to prepare their bodies by means of a low diet, for the reception of the disease in the manner that has been formerly mentioned; and let pleasure, and even labour, where it exposes men to the heat of the sun, or of a culinary fire, be every where suspended. Thus, while the system is prepared to bend like the willow, the contagion of the fever will pass over it, without doing any harm. Let it not be supposed, that I mean, that the history which I have given of the method of cure of our late epidemic, should be applied,

in all its parts, to the yellow fevers which may appear hereafter in the United States, or which exist at all times in the West India islands. Season and climate vary this, as well as all other diseases. Bark and wine, so fatal, in our late, may be proper in a future yellow fever. But without the fear of being refuted, I will notwithstanding assert, that the proper remedies for this fever, at all times, and in all places, in its first stage, *must be* evacuations. The only inquiry, when the disease makes its appearance, should be, from what part of the body these evacuations should be procured; the order which should be pursued in obtaining them, and the quantity of each of the matters to be discharged, which should be withdrawn at a time.

Thus far did I venture, from my theory of the disease, and from the authorities of Dr Hillary and Dr Moseley, to decide in favour of evacuations in the yellow fever in hot climates; but Dr Wade, and Mr Chisholm, again, support me by their practice in the fevers of the East and West Indies. They both gave strong mercurial purges, and bled in some cases. Dr Wade confirmed, by his practice, the advantage of gradually abstracting stimulus from the system. He never drew blood even in the most inflammatory cases, until he had first discharged the contents of the bowels. The Doctor has further established the efficacy of a vegetable diet, and of water as a drink, as the best means of preventing the disorder in a hot climate.

The manner in which the contagion of the plague acts upon the system, is so much like that which has been described in the yellow fever, and the accounts of the efficacy of low diet in preparing the body for its reception, and of copious bleeding, cold air and cold water, in curing it, are so similar, that all the directions which relate to preventing, mitigating, or curing the yellow fever, may be applied to it. The fluids in the plague shew a greater tendency to the

skin, than they do in the yellow fever. Perhaps upon this account, the early use of powerful sudorifics may be more proper in the former, than in the latter disorder. From the influence of early purging and bleeding in promoting sweat in the yellow fever, there can be little doubt, but the efforts of nature to unload the system in the plague through the channel of the pores, might be accelerated by the early use of the same remedies. One thing with respect to the plague is certain; that its cure depends upon the abstraction of stimulus, either by means of plentiful sweats, or of purulent matter from external sores. Perhaps the efficacy of these remedies depends wholly upon their diminishing the indirect debility of the system in a *gradual* manner. If this be the case, those natural discharges might be easily and effectually imitated by small and repeated bleedings.

To correspond in quantity with the discharge from the skin, blood-letting in the plague should be copious. A profuse sweat, continued for twenty four hours, cannot fail of wasting many pounds of the fluids of the body. This was the duration of the critical sweats in the famous plague which was known by the name of the English sweating sickness, and which made its appearance in the army of Henry VII. in Milford-Haven in Wales, and spread from thence through every part of the kingdom.

The principles which lead to the prevention and cure of the yellow fever and the plague, apply with equal force to the mitigation of the measles, and to the prevention or mitigation of the scarlatina anginosa, the dysentery, and the jail or hospital fever. I have remarked, in a former publication \*, that a previous vegetable diet lessened the violence and danger of the measles. Dr Sims taught me, several years ago, to prevent or mitigate the scarlatina anginosa, by means of gentle purges, after children are infect-

\* Medical Inquiries and Observations, vol. ii. page 244.

ed by it †. Purges of salts have in many instances preserved whole families and neighbourhoods from the dysentery, where they have been exposed to the contagion. During the late American war, an emetic seldom failed of preventing an attack of the hospital fever, when given in its forming state ‡. I have had no experience of the effects of previous evacuations in abating the violence, or preventing the mortality of the malignant sore throat; but I can have no doubt of their efficacy, from the sameness of the state of the system in that disorder, as in other malignant fevers. The debility induced in it, is of the indirect kind, and the supposed symptoms of putrefaction, are nothing but the disguised effects of a sudden and violent pressure of an inflammatory stimulus upon the arterial system.

With these observations I close the history of the rise, progress, symptoms, and treatment of the bilious remitting yellow fever which lately appeared in Philadelphia. My principal aim has been to revive, and apply to it, the principles and practice of Dr Sydenham; and however coldly those principles, and that practice, may be received by some physicians of the present day, I am satisfied that experience, in all ages, and in all countries, will vouch for their truth and utility.

† Medical Memoirs, vol. i.

‡ Medical Inquiries and Observations, London Edition, vol. i.  
page 211.

NARRATIVES of escapes from great dangers of shipwreck, war, captivity, and famine, have always formed an interesting part of the history of the body and mind of man. But there are deliverances from equal dangers, which have hitherto passed unnoticed; I mean, from pestilential fevers. I shall briefly describe the state of my body and mind, during my intercourse with the sick in our late epidemic. The account will throw additional light upon the disorder, and probably illustrate some of the laws of the animal economy. It will moreover serve to furnish a lesson to all who may be placed in similar circumstances, to commit their lives without fear, to the protection of that BEING who is able to save to the uttermost, not only from future, but from present evil.

Some time before the fever made its appearance, my wife and children went into the state of New-Jersey, where they had long been in the habit of spending the summer months. My family, about the 25th of August, consisted of my mother, a sister who was on a visit to me, a black servant man, and a mulatto boy. I had five pupils, viz. Warner Washington, and Edward Fisher, of Virginia, John Alston of South Carolina, and John Redman Coxe, (grandson to Dr Redman) and John Stall, both of this city. They all crowded around me upon the sudden increase of business, and with one heart devoted themselves to my service, and to the cause of humanity.

The credit which the new mode of treating the disease acquired in all parts of the city, produced an immense influx of patients to me from all quarters.

My pupils were constantly employed ; at first in putting up purging powders, but after a while only in bleeding and visiting the sick.

Between the eighth and the 15th of September I visited and prescribed for between an hundred and an hundred and twenty patients a day. Several of my pupils visited a fourth or fifth part of that number. For a while we refused no calls. In the short intervals of business which I spent at my meals, my house was filled with patients, chiefly the poor, waiting for advice. For many weeks I seldom ate without prescribing for numbers as I sat at my table. To assist me at these hours, as well as in the night, Mr Stall, Mr Fisher, and Mr Coxe, accepted of rooms in my house, and became members of my family. Their labours now had no remission.

Immediately after I adopted the antiphlogistic mode of treating the disorder, I altered my manner of living. I left off drinking wine and malt liquors. The good effects of the disuse of these liquors, helped to confirm me in the theory I had adopted of the disease. A troublesome head-ach, which I had occasionally felt, and which excited a constant apprehension that I was taking the fever, now suddenly left me. I likewise at this time left off eating solid animal food, and lived wholly, but sparingly, upon weak broth, potatoes, raisins, coffee, and bread and butter.

From my great intercourse with the sick, my body became highly impregnated with the contagion. My eyes were yellow, and sometimes a yellowness was perceptible in my face. My pulse was preternaturally quick, and I had profuse sweats every night. These sweats were so offensive as to oblige me to draw the bed-cloths close to my neck, to defend myself from their smell. They lost their foetor entirely upon my leaving off the use of broth, and living entirely upon milk and vegetables. But my nights were rendered disagreeable, not only by these sweats,

but by the want of my usual sleep, produced in part by the frequent knocking at my door, and in part by anxiety of mind, and the stimulus of the contagion upon my system. I lay down in conformity to habit only, for my bed ceased to afford me rest or refreshment. When it was evening, I wished for morning ; and when it was morning, the prospect of the labours of the day caused me to wish for the return of evening. The degrees of my anxiety may be easily conceived, when I add, that I had at one time upwards of thirty heads of families under my care : among these were Mr Josiah Coates, the father of eight, and Mr Benjamin Scull, and Mr John Morrell, each fathers of ten children. They were all in imminent danger ; but it pleased God to make me the instrument of saving each of their lives. I rose at 6 o'clock, and generally found a number of persons waiting for advice in my shop or parlour. Hitherto the success of my practice gave a tone to my mind, which imparted preternatural vigour to my body. It was meat and drink to me to fulfil the duties I owed to my fellow-citizens in this time of great and universal distress. From a hope that I might escape the disease, by avoiding every thing that could excite the contagion in my body into action, I carefully avoided the heat of the sun, and the coldness of the evening air. I likewise avoided yielding to every thing that should raise or depress my passions. But at such a time, the events which influence the state of the body and mind are no more under our command, than the winds or weather. On the evening of the 14th of September, after eight o'clock, I visited the son of Mrs Berriman, near the Swedes' church, who had sent for me early in the morning. I found him very ill. He had been bled in the forenoon by my advice, but his pulse indicated a second bleeding. It would have been difficult to procure a bleeder at that late hour. I therefore bled him myself. From hanging over his breath and blood for ten minutes, and afterwards riding home

in the night air, debilitated as I was by the labours of the day, I found myself much indisposed the ensuing night. I rose notwithstanding at my usual hour. At 8 o'clock I lost ten ounces of blood, and immediately afterwards got into my chair, and visited between forty and fifty patients before dinner. At the house of one of them, I was forced to lie down a few minutes. In the course of this morning's labours, my mind was suddenly thrown off its pivots, by the last look, and the pathetic cries of a friend for help, who was dying under the care of a French physician. I came home about two o'clock, and was seized immediately afterwards with a chilly fit, and a high fever. I took a dose of the mercurial medicine, and went to bed. In the evening I took a second purging medicine, and lost ten ounces more of blood. The next morning I bathed my face, hands, and feet in cold water for some time. I drank plentifully during the day and night of weak hyson tea, and of water, in which currant jelly had been dissolved. At eight o'clock I was so well as to admit persons who came for advice into my room, and to receive reports from my pupils of the state of as many of my patients as they were able to visit; for unfortunately they were not able to visit them all (with their own) in due time; by which means several died. The next day I came down stairs, and prescribed in my parlour for not less than a hundred people. On the 19th of the same month, I resumed my labours, but in great weakness. It was with difficulty that I ascended a pair of stairs, by the help of a banister. A slow fever, attended with irregular chills, and a troublesome cough, hung constantly upon me. The fever discovered itself in the heat of my hands, which my patients often told me were warmer than their own. The contagion now began to affect me in small and infected rooms, in the most sensible manner. On the morning of the 4th of October I suddenly sunk down in a sick room upon a

bed, with a giddiness in my head. It continued for a few minutes, and was succeeded by a fever which confined me to my house the remaining part of the day.

Every moment, in the intervals of my visits to the sick, was employed in prescribing in my own house for the poor, or in sending answers to messages from my patients; time was now too precious to be spent in counting the number of persons who called upon me for advice. From circumstances, I believe it was frequently 150, and seldom less than 50 in a day, for five or six weeks. The evening did not bring with it the least relaxation from my labours. I received letters every day from the country, and from distant parts of the Union, containing inquiries into the mode of treating the disorder, and after the health and lives of persons who had remained in the city. The business of every evening was to answer these letters, also to write to my family. These employments, by affording a fresh current to my thoughts, kept me from dwelling on the gloomy scenes of the day. After these duties were performed, I copied into my note book all the observations I had collected during the day, and which I had marked with a pencil in my pocket book in sick rooms, or in my carriage. To these constant labours of body and mind were added distresses from a variety of causes. Having found myself unable to comply with the numerous applications that were made to me, I was obliged to refuse many, every day. My sister counted forty seven in one forenoon before 11 o'clock. Many of them left my door with tears; but they did not feel more distress than I did, from refusing to follow them. Sympathy, when it vents itself in acts of humanity, affords pleasure, and contributes to health; but the reflux of pity, like anger, gives pain, and disorders the body. In riding through the streets, I was often forced to resist the entreaties of parents imploring a visit to their chil-

dren, or of children to their parents. I recollect, and even yet I recollect with pain, that I tore myself at one time from five persons in Moravian-alley who attempted to stop me, by suddenly whipping my horse, and driving my chair as speedily as possible beyond the reach of their cries.

The solicitude of the friends of the sick for help, may further be conceived of, when I add, that the most extravagant compensations were sometimes offered for medical services, and in one instance, for only a single visit. I had no merit in refusing these offers, and I have introduced an account of them, only to inform such physicians as may hereafter be thrown into a similar situation, that I was favoured with an exemption from the fear of death, in proportion as I subdued every selfish feeling, and laboured exclusively for the benefit of others. In every instance in which I was forced to refuse these pathetic and earnest applications, my distress was heightened by the fear, that the persons whom I was unable to visit, would fall into improper hands, and perish by the use of bark, wine, and laudanum.

But I had other afflictions besides the distresses which arose from the abortive sympathy which I have described. On the 11th of September, my ingenious pupil, Mr Washington, fell a victim to his humanity. He had taken lodgings in the country, where he sickened with the disorder. Having been almost uniformly successful in curing others, he made light of his fever, and concealed the knowledge of his danger from me, until the day before he died. On the 18th of September, Mr Stall sickened in my house. A delirium attended his fever from the first hour it affected him. He refused, and even resisted force, when used to compel him to take medicine. He died on the 23d of September \*. Scarcely had I re-

\* This accomplished youth had made great attainments in his profession. He was possessed with an uncommon genius for science, talents for music, painting, and poetry. The following copy of an

covered from the shock of the death of this amiable youth, when I was called to weep for a third pupil, Mr Alston, who died in my neighbourhood the next day. He had worn himself down before his sickness, by uncommon exertions in visiting, bleeding, and even sitting up with sick people. At this time Mr Fisher was ill in my house. On the 26th of the month, at 12 o'clock, Mr Coxe, my only assistant, was seized with the fever, and went to his grandfather's. I followed him with a look, which, I feared, would be the last, in my house. At two o'clock my sister, who had complained for several days, yielded to the disorder, and retired to her bed. My mother followed her, much indisposed, early in the evening. My black servant man had been confined with the fever for several days, and had on that day, for the first time, quitted his bed. My little mulatto boy, of eleven years old, was the only person in my family who was able to afford the least assistance. At 8 o'clock in the evening, I finished the business of the day. A solemn stillness, at that time, pervaded the streets. In vain did I strive to forget my melancholy situation, by answering letters, and by putting up medicines, to be distributed next day among my patients. My faithful black man crept to my door, and, at my request, sat down by the fire; but he ad-

unfinished letter to his father, (who had left the city) was found among his papers, after his death. It shews, that the qualities of his heart were equal to those of his head :

PHILADELPHIA, September 15. 1795.

" My DEAR FATHER,

" I take every moment I have to spare to write to you, which is not many; but you must excuse me, as I am doing good to my fellow creatures. At this time, every moment I spend in idleness, might probably cost a life. The sickness increases every day; but most of those who die, die for want of good attendance. We cure all we are called to on the first day, who are well attended; but so many Doctors are sick, the poor creatures are glad to get a Doctor's servant."

ded, by his silence and dullness, to the gloom which suddenly overpowered every faculty of my mind.

On the first day of October, at two o'clock in the afternoon, my sister died. I got into my carriage within an hour after she expired, and spent the afternoon in visiting patients. According as a sense of duty, or as grief, has predominated in my mind, I have approved or disapproved of this act, ever since. She had borne a share in my labours. She had been my nurse in sickness, and my casuist in my choice of duties. My whole heart repos'd itself in her friendship. Upon being invited to go to a friend's house in the country, when the disease made its appearance in the city, she declined accepting the invitation, and gave, as a reason for so doing, that I might probably require her services, in case of my taking the disorder; and that, if she were sure of dying, she would remain with me, provided that, by her death she could save my life. From this time I declined in health and strength. All motion became painful to me. My appetite began to fail. My night sweats continued. My short and imperfect sleep was disturbed by distressing or frightful dreams. The scenes of them were derived altogether from sick rooms and grave-yards. I concealed my sorrows as much as possible, from my patients; but when alone, the retrospect of what was past, and the prospect of what was before me, the termination of which was invisible, often filled my soul with the most poignant anguish. I wept frequently, when retired from the public eye; but I did not weep over the lost members of my family alone. I beheld or heard, every day, of the deaths of citizens, useful in public, or amiable in private life. It was my misfortune to lose, as patients, the Rev. Mr Fleming and Mr Graefel, both exhausted by their labours of piety and love among the poor, before they sickened with the disorder. I saw the last struggles of departing life in Mr Powel, and deplored, in his death, an upright and faithful ser-

vant of the public, as well as a sincere and affectionate friend. Often did I mourn over persons who had, by the most unparalleled exertions, saved their friends and families from the grave, at the expence of their own lives. Many of these martyrs to humanity were in humble stations. Among the members of my profession, with whom I had been most intimately connected, I had daily cause of grief and distress. I saw the great and expanded mind of Dr Pennington shattered by delirium, just before he died. He was to me dear and beloved, like a younger brother. He was, moreover, a Joab, in the contest with the disease. Philadelphia must long deplore the premature death of this excellent physician. Had he lived a few years longer, he would have filled an immense space in the republic of medicine \*. It was my affliction to see my friend Dr John Morris breathe his last, and to hear the first effusions of the most pathetic grief from his mother, as she bursted from the room in which he died. But I had distress from the sickness, as well as the deaths of my brethren in physic. My worthy friends, Dr Griffitts, Dr Say, and Dr Mease, were suspended by a thread over the grave, nearly at the same time. Heaven, in mercy to me, as well as in kindness to the public and their friends, preserved their lives. Had they died, the measure of my sorrows would have been complete.

I have said before, that I early left off drinking wine ; but I used it in another way. I carried a little wine in a vial in my pocket, and when I felt myself fainty, after coming out of a sick room, or after a long ride, I kept about a spoonful of it in my mouth for half a minute, or longer, without swallowing it.

\* Before he finished his studies in medicine, he published a volume of ingenious and patriotic "Chemical and  $\text{\O}$ economical Essays, designed to illustrate the connection between the theory and practice of chemistry, and the application of that science to some of the arts and manufactures of the United States of America."

So weak and excitable was my system, that this small quantity of wine refreshed and invigorated me as much as half a pint would have done at any other time. The only difference was, that the vigour I derived from the wine in the former, was of shorter duration than when taken in the latter way.

For the first two weeks after I visited patients in the yellow fever, I carried a rag wetted with vinegar, and smelled it occasionally in sick rooms : but after I saw and felt the signs of the universal presence of the contagion in my system, I laid aside this, and all other precautions. I rested myself on the bed-side of my patients, and I drank milk, or eat fruits in their sick rooms. Besides being saturated with the contagion, I had another security against being infected by my patients, and that was, I went into scarcely a house which was more infected than my own. Most of the people who called upon me for advice, left a portion of contagion behind them. Four persons died next door to me on the east ; three a few doors above me on the west ; and five in a small frame house on the opposite side of the street, towards the south. On the north side, and about 150 feet from my house, the fever prevailed with great malignity in the family of Mr James Cresson. But this was not all. Many of the poor people who called upon me for advice, were bled by my pupils in my shop, and in the yard, which was between it and the street. From the want of a sufficient number of bowls to receive their blood, it was sometimes suffered to flow and putrify upon the ground. From all these sources, streams of contagion were constantly poured into my house, and conveyed into my body by the air, and in my aliment. Thus charged with the fuel of death, I was frequently disposed to say with Job, and almost without a figure, to " corruption, thou art my father ; and to the worm, thou art my mother and my sister."

The deaths of my pupils and sister have often been urged as objections to my mode of treating the fever. Had the same degrees of labour and fatigue which preceded the attack of the yellow fever in each of them, preceded an attack of a common pleurisy, I think it probable that some, or perhaps all of them, would have died with it. But when the influence of the concentrated contagion which filled my house, was added to that of constant fatigue upon their bodies, what remedies could be expected to save their lives? Under the above circumstances, I consider the recovery of the other branches of my family from the fever, (and none of them escaped it) with emotions such as I should feel, had we all been revived from apparent death, by the exertions of a humane society.

In getting hastily out of my carriage about the 22d of September, I wounded one of my fingers with a small nail. As my hands were constantly exposed to the contagion of the fever in feeling pulses, I had this wound carefully wrapped up, from an apprehension that the contagion, when received directly into the blood, might more certainly excite the fever, than when received in the ordinary way. In the hurry of business, the rag dropped off my finger without my noticing it. The wound inflamed, but healed notwithstanding in a few days, and I found no inconvenience from it.

The issue of this accident was highly satisfactory to me, as it established the analogy between the small pox and yellow fever, and confirmed me in the propriety of preparing the body for the reception of the latter, by the same regimen, as for the former disorder.

For upwards of six weeks I did not taste animal food, nor fermented liquors of any kind. The quantity of aliment which I took, inclusive of drinks, during this time, was frequently not more than one or two pounds a day. Yet upon this diet, I possessed for

a while uncommon activity of body. This influence of abstinence upon bodily exertion, has been happily illustrated by Dr Jackson, in his directions for preserving the health of soldiers in hot climates. He tells us, that he walked an hundred miles in three days in Jamaica, during which time he breakfasted on tea, and supped on bread and saltad, and drank nothing but lemonade or water. He adds further, that he walked from Edinburgh to London in eleven days and an half, and that he travelled with the most ease when he only breakfasted and supped, and drank nothing but water. The fatigue of riding on horse-back, is prevented or lessened by abstinence from solid food. Even the horse suffers least from a quick and long journey, when he is fed sparingly with hay. These facts add weight to the arguments formerly adduced, in favour of a vegetable diet, in preventing or mitigating the action of the contagion of malignant fevers upon the system. In both cases, the abstraction of stimulus removes the body further from the reach of indirect debility.

Food supports life as much by its stimulus, as by affording nourishment to the body. Where an artificial stimulus acts upon the system, the natural stimulus of food ceases to be necessary. Under the influence of this principle, I increased, or diminished my food with the signs I discovered of the increase, or diminution of the contagion in my body. Until the 15th of September I drank weak coffee; but after that time, I drank nothing but milk, or milk and water, in the intervals of my meals. I was so satisfied of the efficacy of this mode of living, that I believed life might have been preserved, and a fever prevented, for many days, with a much greater accumulation of the contagion in my system, by means of a total abstinence from food. Poison is a relative term, and an excess in quantity, or a derangement in place, is necessary to its producing deleterious effects. The contagion of the yellow fever produced

sickness and death, only from the excess of its quantity, or from its force being increased by the addition of those other stimuli which I have elsewhere called exciting causes.

In addition to low diet, as a preventive of the disorder, I obviated costiveness by taking occasionally a calomel pill, or by chewing rhubarb.

I had read, and taught in my lectures, that fasting increases acuteness in the sense of touch. My low living had that effect in a certain degree upon my fingers. I had a quickness in my perception, of the state of the pulse in the yellow fever, that I had never experienced before in any other disorder. My abstemious diet, assisted perhaps by the state of my feelings, had likewise an influence upon my mind. Its operations were performed with an ease, and a celerity, which rendered my numerous, and complicated duties, much less burdensome, than they would probably have been under other circumstances of diet, or a less agitated state of my passions.

My perception of the lapse of time was new to me. It was uncommonly slow. The ordinary business and pursuits of men appeared to me in a light that was equally new. The helle and the grave mingled themselves with every view I took of human affairs. Under these impressions I recollect being as much struck with observing a number of men employed in digging the cellar of a large house, as I should have been at any other time, in seeing preparations for building a palace upon a cake of ice. I recollect further, being struck with surprize about the 1st of October, in seeing a man busily employed in laying in wood for the approaching winter. I should as soon have thought of making provision for a dinner on the first day of the year 1800.

In the account of my distresses, I have passed over the slanders which were propagated against me by some of my brethren. I have mentioned them only for the sake of declaring, in this public manner, that

I most heartily forgive them ; and that it I discovered, at any time, an undue sense of the unkindness and cruelty of those slanders, it was not because I felt myself injured by them, but because I was sure they would irreparably injure my fellow citizens, by lessening their confidence in the only remedies that I believed to be effectual in the reigning epidemic. One thing in my conduct towards these gentlemen may require justification ; and that is, my refusing to consult with them. A Mahometan and a Jew might as well attempt to worship the Supreme Being in the same temple, and through the medium of the same ceremonies, as two physicians of opposite principles and practice, attempt to confer about the life of the same patient. What is done in consequence of such negotiations (for they are not consultations) is the ineffectual result of neutralised opinions ; and wherever they take place, would be considered as the effect of a criminal compact between physicians, to assess the property of their patients, by a shameful prostitution of the dictates of their consciences. Besides, I early discovered that it was impossible for me, by any reasonings, to change the practice of some of my brethren. Humanity was therefore on the side of leaving them to themselves ; for the extremity of *wrong* in medicine, as in morals and government, is often a less mischief than the mixture of *right* and *wrong*, which serves, by palliating, to perpetuate evil.

After the loss of my health, I received letters from my friends in the country, pressing me in the strongest terms to leave the city. Such a step had become impracticable. My aged mother was too infirm to be removed, and I could not leave her. I was moreover, part of a little circle of physicians, who had associated themselves in support of the new remedies. This circle would have been broken by my quitting the city. The weather varied the disease ; and, in the weakest state of my body, I expected to be able,

from the reports of my pupils, to assist my associates in detecting its changes, and in accommodating our remedies to them. Under these circumstances, it pleased God to enable me to reply to one of the letters that urged my retreat from the city, that " I had resolved to stick to my principles, my practice, and my patients, to the last extremity."

On the ninth of October, I visited a considerable number of patients, and as the day was warm, I lessened the quantity of my clothing. Towards evening, I was seized with a pain in the back, which obliged me to go to bed at eight o'clock. About twelve I awoke with a chilly fit. A violent fever, with acute pains in different parts of my body, followed it. At one o'clock I called for Mr Fisher, who slept in the next room. He came instantly, with my affectionate black man, to my relief. I saw my danger painted in Mr Fisher's countenance. He bled me plentifully, and gave me a dose of the mercurial medicine. This was immediately rejected. He gave me a second dose, which likewise acted as an emetic, and discharged a large quantity of bile from my stomach. The remaining part of the night was passed under an apprehension that my labours were near an end. I could hardly expect to survive so violent an attack of the fever, broken down, as I was, by labour, sickness, and grief. My wife and seven children, whom the great and distressing events that were passing in our city, had jostled out of my mind for six or seven weeks, now resumed their former place in my affections. My wife had stipulated, in consenting to remain in the country, to come to my assistance in case of my sickness; but I took measures, which, without alarming her, proved effectual in preventing it. My house was a Lazaretto, and the probability of my death made her life doubly necessary to my family. In the morning, the medicine operated kindly, and my fever abated. In the afternoon it returned; attend-

ed with a great inclination to sleep. Mr Fisher bled me again, which removed the sleepiness. The next day the fever left me, but in so weak a state, that I awoke two successive nights with a faintness which threatened the extinction of my life. It was removed each time by taking a little aliment. My convalescence was extremely slow. I returned in a very gradual manner to my former habits of diet. The smell of animal food, the first time I saw it at my table, forced me to leave the room. During the month of November, and all the winter months, I was harrassed with a cough and a fever somewhat of the hectic kind. The early warmth of the spring removed those complaints, and I now enjoy, through divine goodness, my usual state of health.

I should be deficient in gratitude, were I to conclude this narrative without acknowledging my obligations to my surviving pupils Mr Fisher and Mr Coxe, for the great support and sympathy I derived from them in my labours and distresses.

I take great pleasure, likewise, in acknowledging my obligations to my former pupil Dr Woodhouse, who assisted me in the care of my patients, after I became so weak as not to be able to attend them with the punctuality their cases required. The disinterested exploits of these young gentlemen in the cause of humanity, and their success in the treatment of the disorder, have endeared their names to hundreds, and, at the same time, afforded a prelude of their future eminence and usefulness in their profession.

But wherewith shall I come before the great FATHER and REDEEMER of men, and what shall I render unto him, for the issue of my life from the grave?

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Here all language fails

" Come then, expressive silence, muse his praise."

F I N I S.



